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RESEARCHES

ON

PRIMARY PATHOLOGY,



ND THE

ORIGIN AND LAWS OF EPIDEMICS;

IN TWO VOLUMES:

By M. L. KNAPP, M. D.,

MEMBER OF THE MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND; LATE PROFESSOR OF MATERIA MEDICA, AND PRESIDENT OF THE COLLEGE OF PHYSICIANS AND SURGEONS OF THE UNIVERSITY OF IOWA; LATE PROFESSOR OF MIDWIFERY AND DISEASES OF WOMEN AND CHILDREN IN RUSH MEDICAL COLLEGE; AUTHOR OF "LECTURES ON THE SCIENCE OF LIFE INSURANCE," ETC.

VOL. I.

Morborum omnium unum et idem modus est, locus autem differentiam facit.
HIPPOCRATES.

There is but one fever. * * * I use the term diseases in conformity to custom, for, properly speaking, disease is as much a unit as fever.
RUSH.

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TO

THE AMERICAN MEDICAL ASSOCIATION,

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THE COLLEGE OF PHYSICIANS,

LONDON:

THE INSTITUTE OF FRANCE,

PARIS:

IN THE HOPE THAT, FOR HUMANITY'S SAKE, COMMISSIONS
MAY BE APPOINTED BY EACH BODY RESPECTIVELY,
TO REPORT ON THE TRUTH OR FALLACY
OF THESE NEW DOCTRINES.

THIS WORK IS RESPECTFULLY INSCRIBED,

BY THE AUTHOR.

PREFACE.

This Work claims to unfold the Primary Pathology of Disease. It claims to set forth the *vera causa* of not only Epidemic Cholera, but of every other epidemic form of disease, yea, of all sporadic disease. It contains New Doctrines, then, or embodies what is believed to be a substantial progress made in medical science; a philosophy that explains, on inductive principles, the Origin and Laws of Epidemics—of all forms of disease, indeed—giving the *rationale* thereof. No claim is made to the discovery of new principles; only a new application of known principles, revealed through the more modern progressive sciences, Physiology and Organic Chemistry; principles or truths which our forefathers in Physic were unacquainted with, and therefore could not apply either in explanation of the pathology or in elucidation of the rational treatment of disease.

It is rendered very evident then, by the mere announcement of the character of the work, that the broad sarcasm levelled at medical Authors, as well as the Profession, by the renowned Dr. Mead, in his advice as to the course for achieving successful authorship, has not been endorsed by the Author, nor the advice followed, viz.: "Choose the subject by which you think you will get most money, or that which will bring you the most general business, as fevers, small-pox, &c., for in those some must always live, some die, 'tis a hard matter to tell when right, or when wrong. But above all things, take particular care, let the subject be what it will, that the words be well chosen, so as to make an elegant and florid speech; since you have ten to one who mind the language more than the ideas. I would advise you, whatever the subject be you write upon, rather to write, so that no man can make anything of it, so as neither to make downright sense or nonsense; because, thus, none of the profession can well lay hold of you for any particular part; or, if they should, there is room for you to defend it, being as easy to be understood one way as the other. This is that method I commend, which Mr. Locke observes is possible enough, viz.: to write a tolerable discourse of well-chosen and well-joined words, which, nevertheless makes not up any real sense or intelligible meaning. Thus, suppose you were to

write of sleep; now if you write in this manner it is ten to one it will make all who read it fall a-sleep, consequently, what better can be said on the subject:" but rather by this work and the method of the Author, science is held to be progressive, and the Profession is especially complimented as worthy of being treated to great truths, and capable of discerning them.

Nevertheless, though the new doctrines maintained may be clear and truthful, there is no probability of their being received and endorsed by acclamation. Time is the arbiter of all things, all newly-presented theories, doctrines, and innovations. To make a record is the first thing. All great truths have first to be announced. An argument or theory is indispensable. It has been objected to the author's views that the whole matter is but a theory—"Theory run riot." The same may be, and was objected to the theory of the revolution of the earth; no man can ever appreciate the fact by his external senses. The phenomena, however, in both instances are explained by the respective theory of each, thus gaining the assent of the reason, the interior sense. The old theory of the revolution of the heavenly bodies round the earth, we know, when we reason on the subject, to be impossible. The same of the old theories of disease. Still, whoever is bold enough to speak, write, and adopt truth for truth's sake, must expect little present reward. So satisfied is the Author of the truth of his deductions, that he hesitates not to adopt the enthusiastic language Kepler used in announcing his discoveries, see *Harmonices Mundi*, proem to 5th book, *De Motibus Planetarium*. "Eighteen months ago, I saw the first ray of light; three months since I saw the day; a few days ago I saw the sun himself, of most admirable beauty. Nothing can restrain me; I yield to the sacred frenzy. I dare ingenuously to confess, that I have stolen the golden vessels of the Egyptians, (alluding to the ideas of Ptolemy on the same subject,) and will build of them a tabernacle to my God. If you pardon me I rejoice; if you reproach me I can endure it; the die is thrown, I write a book to be read, whether by the present or future ages, it matters not. It can wait for a reader a century, if God himself waited six thousand years for an observer of his works." If this impulsive language be justifiable in heralding the truths of Natural Philosophy, how much more so in announcing new truths in the humanitary Science of Medicine.

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DISCOVERY

OF THE

CAUSE, NATURE, CURE AND PREVENTION

OF

EPIDEMIC CHOLERA.

BY M. L. KNAPP, M. D,

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DISCOVERY

OF THE

CAUSE. NATURE, CURE AND PREVENTION

OF

EPIDEMIC CHOLERA.

TAKING a survey of the human family inhabiting this earth, it is the work of but a moment only, to examine the several agents in the material world that support them in life and maintain them in health: food and drink, atmospheric air, heat, light and electricity, are all.

Medium, or moderate impressions of these agents necessary to life, or vital stimulants, maintain a physiological state, or the condition of comfort, buoyancy and happiness, called health. Any other than medium, or moderate impressions, either in force or quality, especially if long continued, induce a pathological state, or a condition of discomfort and tendency to death, called disease. It is to be observed, however, that a considerable variation is compatible with health, especially if neither sudden nor long continued. Man is most comfortable, for instance, in a temperature of about 65 degrees F., but he can withstand 100 degrees if not long continued, or 20 degrees below zero. So of all the vital stimulants, moderation is the law of health. But the earth must wheel its stated course around the sun, producing the phenomena of the seasons; hence, man must be subjected to extreme impressions in summer and winter, and the vegetable kingdom to droughts, frosts and blights, abridging the vital stimulus of food. These are the laws of Nature, and in them are involved the causes of disease. No other external influences are known, or acknowledged to be present in the

physical world, by which the health of human beings can be disturbed, and cannot be admitted without hypothesis.

Discarding all the hypothetical causes of Cholera that may have been offered, such as contagion; infection; epidemic influence; an imaginary entity, possessing the quality of portability; astral influence; malaria, or miasmata, (whether vegetable fungi, or animalculæ;) teluric emanations; supernatural agency, called the displeasure of Providence, or the vengeance of God; I look only to known, natural causes of disease, or extreme impressions of the natural vital stimuli, for the cause of Cholera, and a rational explanation of all the phenomena it presents.

1. Deviations from a healthful standard, in the impression of the vital stimulus of food, or alimentation, constitute one class of causes of disease.

On this proposition I remark, that the natural law, governing man as an *omnivorous* animal, is as imperious as that which has ruled the ox, *herbivorous*, or the tiger *carnivorous*. Infractions of this law call for a penalty; and it is as much a violation of it to withhold *all kinds*, or a variety of animal and vegetable food and fruits from man, as to stall-feed an ox on meats, or to graze a tiger on clover.

2. Deviations from a healthful standard, in the impression of atmospheric air, constitute another class of causes of disease.

On this proposition I venture the remark, that this source is most accused, but least at fault. Oxygen is tempered by nitrogen to a suitable medium standard for life and health, and the vegetable kingdom is continually absorbing its accidental impurities, and exchanging pure air: maintaining it in *statu quo*, or at the healthful natural standard. It is impossible for more than merely confined localities to have an impure air, and ventilation quickly corrects the evil.

3. Deviations from a healthful standard, in the impression of heat, light and electricity, always united, so far as science reveals, constitute a third class of causes of disease: the second and third classes are called meteoric causes of disease.

On this proposition I remark, that the power for good or evil of this class of vital stimulants, as manifested in the annual variations of the seasons, is more remarkable upon the vege-

table than animal kingdom. Man being enabled to heat up his system by oily, animal food in winter, and to avert, measurably, the discomfort of the high temperature of summer, by a diet of cooling, acid fruits, can, by studying the laws of diet, greatly accomodate himself to these exigencies.

Here then, this important matter is narrowed down, and presented to our common sense under three heads, embracing all known external influences in the material world capable of producing disease; and it follows, as a matter of course, that the cause which produces Cholera is to be looked for in one, or in two, of these sources, or in all three united. Now, it seldom happens, according to general observation, that great sickness and mortality occur, without the combined and co-operating influence or agency of these three causes, one acting as the remote, inlaying, or predisposing cause, and the other two as exciting causes. The question, then, naturally propounds itself—Which of these causes is most probably the remote, or inlaying cause of Cholera?

Looking at the phenomena as presented in the spread of Cholera, the two meteoric classes of causes named, covering high solar heat or insolation, vitiated air, vicissitudes, or sudden changes from heat to cold, and *vice versa*, humidity, rains, gales, tempests, thunder-storms and the barometrical phenomena noticed, appear in immediate connection with its outbreaks, progress or aggravation, and are not only generally considered, but are universally held and conceded to be, its *exciting* causes. Hence it follows, that some error in the vital stimulus of alimentation is the *remote* or *inlaying* cause of Cholera: there is no other remaining in the world from whence to derive it.

Forced to this conclusion by sound logic, I would ask in the next place—Does the error in the vital stimulus of food, which produces Cholera, most probably come of a profusion, a poisoning, or a scarcity? All the world will answer the latter; for the poor and destitute are its special victims, while the rich, having means to purchase plenty and variety, though prices be high, and so to fulfill the omnivorous law, usually escape; and under a general poisoning of the food, rich and poor would indiscriminately fall. Futhermore, the

population of a country holds in the ratio of its productions: famine is always followed by pestilence. Hence I am forced again, by universal observation, and the axioms of political economy, to conclude the error arises from an abridgment; and as the vegetable kingdom is most obnoxious to the meteoric influences causing blights, I infer the difficulty lies in an abridgment of the vegetable productions and stores, or a scarcity in kind, leaving the poorer classes on a cheap, stale, refuse, animal, coarse, *one kind of diet* without succulent vegetables.

Glancing now at medical history, it appears that down to near the close of the last century, from time immemorial, a peculiar form of disease, called scorbutus or scurvy, was the great scourge of mankind in all parts of the world, destroying more lives than all other causes of death put together, wars and accidents included. The same mystery enshrouded its nature, its cause, and its spread, that now hangs over Cholera; the same bewilderment and confusion prevailed at the bedside; all the causes that have been conjectured to produce Cholera, were conjured up, marshalled, and arrayed under plausible, specious and imposing hypotheses, and set down by their respective advocates as the causes of scorbutus; but at last, the simple truth forced itself upon the world, that the cause of scurvy was some error in the vital stimulus of food; and it is now well enough ascertained, that the error consists in the absence of succulent vegetables; let these be wanting or even but partially wanting, for any considerable length of time, and, no matter what the diet in other respects, scurvy will make its appearance. (*Budd.*) A return to the free use of succulent vegetables and fruits, and this course pursued, will arrest and cure the disease. For the last sixty years this disease has been measurably and apparently banished, or so held at bay, or modified by the inculcated free use of succulent vegetables, fruits and their juices, that it is not known or recognized when it does make its appearence, and its presence is not dreamed of, when but partially developed, although a whole community, municipality or nation, may be under its power and evil influence, and all forms of disease dreadfully aggravated by its presence.

"We have seen," says Dr. Budd, "that the approach of scurvy is gradual, and that prolonged abstinence from succulent vegetables is necessary for its full development; but it is our opinion that something short of this, that a condition which might be correctly designated a scorbutic taint, must often occur in the lower classes in towns, but especially in prisons and asylums, towards and at the close of long winters, when succulent vegetables are scarce and expensive. Such a condition of the system would necessarily modify the character and course of supervening acute diseases; and it is worthy of most diligent inquiry, whether that form of scarlatina denominated *maligna*, and analogous types of other eruptive diseases, may not, in some cases, owe their peculiar aspect and character to the circumstance of a scorbutic taint already existing, when the system becomes subject to the specific poison of these several diseases. A fact which renders this probable is, that these types prevail most during and at the close of long winters. We may here notice the extraordinary prevalence of typhus in the severe winter of 1837-38, and the petechial character of that epidemic. Sir Gilbert Blane has remarked that the low spotted typhus is always most prevalent in long and severe winters. Willan also states, that the malignant form of scarlatina is usually limited to the winter months. The following paragraph, from Huxam's essay on small-pox, may also bear on this subject: 'I have never observed either the *vegetable or mineral acids* of any great service in the crude crystalline pox, but I have often found them highly useful in the *small black confluent kind*, with *petechiæ*.' It appears to us, also, that by the common practice of physicians in many chronic diseases, patients are kept far too long a time on a diet consisting of farinaceous food. When a moderate use of succulent vegetables is considered prejudicial, it would be advisable to supply the patient with their equivalent, namely, a certain proportion of orange or lemon juice." (*Tweedie's Practice.*)

Thus the experience of Dr. Budd, and others, fully confirms the observations of the writer, that scurvy underlies and aggravates all forms of disease, that are developed towards the close of winter and through the spring, and,

according to the writer's experience, through the summer months also; for he has particularly noticed the great aggravation of midsummer bilious fever, and cholera-infantum epidemics, after long, cold winters, and retarded springs, for the last twenty years, as an invariable result or coincidence.

The outbreaks of scorbutus, then, *per se*, as well as its more hidden and complicated manifestations, follow cold winters and retarded springs; yet its pernicious influence is felt, more or less, particularly among the poorer classes in cities, every spring. It generally begins to show itself during the interregnum of vegetable supplies that occurs between the going out of old and coming in of new or fresh stores, develops into epidemic form under solstitial influences acting as exciting causes, and recedes in autumn, or as abundant supplies of fresh vegetables and fruits greet the markets, and their plentifulness reduces prices within the limited means of the poor.

These laws of scurvy are explained by the facts, that severe and protracted winters always frost and greatly abridge the vegetables and fruits in store; that they are generally preceded by summers of great heat and drought, which abridge production; and that, added to these evils, they weaken or debilitate the systems of all, by a prolonged low degree of the vital stimulus of heat, together with foul air within doors, confinement, or want of proper exercise; and these co-operating causes, pressing with greatest severity upon the poorer classes, whose diet consists of the coarsest and cheapest kinds of stale meats and breadstuffs, with peas and beans, at best, for vegetables, when the summer heat comes on, with other depressing and disturbing meteoric influences acting as exciting causes, epidemic scurvy is the result; and nothing but the abundance of autumnal supplies of succulent vegetables and fruits will restore the public health.

Placing these historical facts in connection with the preceding logical deductions, the human mind is compelled to yield assent to the adequacy of the cause assigned for the effect produced; and when it is considered how true must be

the adage, "there is nothing new under the sun," in the laws of Nature; I am forced to the conclusion, that *Cholera is but a modified form of scorbutus*, or a younger sister-scourge of the same parentage; probably better expressed by calling it a hemorrhagic termination of latent scurvy, or a manifestation of the law of sudden collapse, familiar among the dying phenomena of scorbutus.

I must either adopt this rational philosophy, or accept the most improbable alternative, that Cholera is a *new disease;* and lingering still on the confines of the history of scorbutus, I find its ever Protean character; its ever changeful, chameleon dress; its ever insidious, insinuating, stealthful invasion of masses of mankind, peculiarly situated; its ever misleading manifestations, strange vagaries, and anomalous phenomena; perfectly answering and solving the matter, if I cut myself loose from the dogma, that Cholera has other and a specific cause, and adopt this innovation in etiology, that Cholera is nothing but a symptom of scorbutus—a serous hemorrhage from the petechiæ, or lesions of the mucous membranes of the stomach and bowels.

The reasons drawn from observation, for believing Cholera to be of scorbutic character, are as follows, to wit:

1. *The coincidences of cold winters, retarded springs, frosts and blights preceding its outbreaks.* It is a matter of history that the winter of 1831–32 was one of the coldest winters ever known. The rivers and harbors of the United States were frozen from November until April, and winter was literally found lingering in the lap of May. The preceding summer was one of great heat and humidity, rains, floods and deluges. Reasoning from the intensity of these meteoric influences throughout the United States, the crops must have been distressingly abridged; the stores of succulent vegetables and fruits extensively frosted; and prices exorbitantly high in the spring of 1832. Under the operation of these causes of scurvy, active in the highest degree, when the summer heat of June of that year struck the United States, the Cholera broke out in New York and other cities and large towns, and raged until the scorbutic subjects were slaughtered, and the public health was repaired by the ripening and free use

of vegetables and fruits. Unfortunately for the state of the public health during that season, fruits and vegetables were interdicted by medical opinion, the notion gaining almost universal credence that they were exciting causes of Cholera, which opinion has ever since prevailed in the United States.

The same constitution of seasons, I am informed by an intelligent English gentleman, prevailed in Great Britian in 1831–32, and accordingly the Cholera broke out in London, and other large cities and towns of the kingdom, and also in Paris and other cities of France.

Not to undertake to pursue the cause through blights, by tracing it on the back track through Prussia and Russia, the year preceding, and so on to India, suffice it to note that its outbreaks and spread in America were governed by the laws that are known to govern scurvy, the date of its advent in the cities on this continent answering to the relative intensity of the causes of scurvy that should have been, and doubtless were, present to call it into action. It broke out of priority, as it should have done, in Quebec, (the colder the country, other things being equal, the more intense the causes of scurvy,) on the eight of June; on the tenth at Montreal; a little later at Kingston; and so in its south-west course up the lakes, to the Valley of the Mississippi, into successively warmer regions. It appeared in New York on the twenty-fourth of June; at Albany, where poverty and destitution were less intense, though the latitude is higher, on the third of July; at Boston, also later, for the same reason; at Philadelphia, on the fifth of July; and at Baltimore a few weeks later, and so on.

It made its appearance partially again in the year 1834, in the cities of the United States, after a rather cold winter, and surely the most frosty, blighting spring within the memory of the oldest inhabitants. All the fruits nearly, apples, pears, peaches, plums, grapes, currants, gooseberries etc., were blighted by a chilling frost that occurred about the middle of May. The peaches, apples, etc., of the size of sparrows' eggs, fell from the trees. The very forests put on an autumnal gloom. When solstitial influences came to bear upon this preparation of the systems of thousands of

the poorer classes, always most predisposed, the Cholera broke out with considerable severity in various cities of the United States. The fact was noticed, that it seemed to rage more fiercely again in the same cities where it was most severe in 1832, and where, no doubt, the causes of scurvy were most intense, and where, besides any influences of topography, the citizens were schooled and trained in the prohibition of vegetables, fruits and greens; and the country people not finding ready sale for these products, their culture was neglected, and they were deterred from marketing them through fear.

Again, the winter of 1848–49 was a remarkably cold winter all over the United States, the spring of '49 greatly retarded, and all degrees of the scorbutic diathesis were observed at the bedside by the writer of this, who had for years been an observer of its stealthful, annual appearance. The universal spread of Cholera in the cities of the United States, in the summer of 1849, is well remembered, and its continuance until the coming in and use of the new crops of vegetables and fruits. Their free use, however, during the prevalence of Cholera, has never been known or tolerated. They have rotted in the field rather. It has been held fool-hardy or tempting Providence to eat them.

Casting a glance across the Atlantic, the years 1846–47 were years of dearth, scarcity and blight in Europe, particularly of the potato, the most valuable anti-scorbutic vegetable known; and the scurvy and Cholera together followed, scourging the nations generally. Writers in describing the spread of Cholera in Europe in 1847, say, substantially, that it started from India again, early in that year, passed through the cities of Persia, and those along the shores of the Caspian, reached Astracan in July, and appeared at Moscow, faint and weary, in the fall, where it took a refreshing sleep through the winter, but woke up in June, 1848, much refreshed and invigorated, and pursued its travels *via* St. Petersburg, Berlin, Hamburg, etc., to Edinburg and London, where it arrived in November, *en route* for Paris. It is worthy of remark, that it struck England again, in her weakest and most scorbutic point, her Newcastle coal mines,

and foul holds of her coal vessels; and that, prior to its reaching France, the *cause* of it set sail from Havre for America, in two emigrant ships that sailed in October and November. In the October ship it broke out when sixteen days at sea; and the emigrants were landed at Quarantine, in New York, in November, and the disease spread through the Quarantine Hospital, where the sickly, scorbutic inmates were kept on a routine dietary, and whose cup of affliction was made to run over through panic and an increased accumulation of foul air; and a few cases occurred among the emigrants that went to the "Five Points," in the city of New York, where, however, it could make no progress, because of the abundance of fall fruits and vegetables, so it again slept through the winter, the intensely cold winter that followed. In the other ship it broke out when twenty-six days at sea, the *cause* in the emigrants having been more subdued before embarkation, by autumnal fruits and vegetables, than in those of the other ship, which sailed a month earlier; and the passengers were landed at New Orleans in December, where the disease spread among emigrants and the poor, the weather, for the season of the year, being hot, and a further reason, potatoes in the south scarce; and it continually appeared on the Mississippi in steamboats, among emigrant passengers, all winter, and in the river towns as high up as St. Louis and Cincinnati, and established itself gradually in the ports further and further north, as potatoes and succulent vegetable stores failed, and warm, debilitating spring weather came on.

In the summer of 1849, as observed, it broke out generally in the cities of the United States. Now in all these movements, or rather outbreaks, in Asia, Europe, on the Atlantic Ocean, and in the cities of America, it obeyed the laws of scurvy, and was rendered active in proportion to the *remote* and *exciting* causes of scurvy present; and the emotional, exciting cause of *fear* or panic must not be overlooked.

The more partial epidemic of 1850 is to be explained by the more partial abridgment of vegetables and fruits, in various localities, owing either to blights, the withdrawal of labor from production during the sickly summmer of 1849, or the false doctrine that vegetables and fruits are injurious;

probably all combined. The scurvy was noticed again by the writer at the bedside in 1850, and it broke out in the Commercial Hospital of this city in July of that year, while the Cholera was raging here. (*Western Lancet*, 1851.)

The Cholera manifested some activity again in the summer of 1852, after another very severe winter, and a previous summer of great heat and drought, in various localities in the United States. The summer of 1852, however, was a cool one, in the main, and the exciting causes of Cholera, therefore, not powerful. Its ravages at Maysville, Ky., Wheeling, Va., and sundry other points in the Mississippi Valley, are matters of history, and can only be accounted for on rational principles, by tracing the cause to the constitution of the previous summer, abridging production in the localities surrounding the cities and towns where it raged, and the inclemency of the winter, frosting the vegetables and fruits in store. Finding that the conclusions drawn are all the way thus far supported by facts, the coincidences of cold winters, and the causes that produce scurvy, and that during other years there have been no epidemic manifestations of Cholera, the argument seems a good one and worth pursuing.

Applying the same theory, the want of succulent vegetable food, to the rather general prevalence of Cholera in the cities of the United States this season, 1854, a rather intense causation is found, of general application, in the extravagantly high prices of provisions during the present year, high prices not only betokening scarcity, but being the same in effect to the poor. I notice the fact in the public prints, that scurvy and Cholera were both found raging simultaneously in the Poor-house at Buffalo this summer.

Thus the coincidences of cold winters and retarded springs, preceding the outbreaks of Cholera in the United States, its vernal appearance, solstitial ragings, autumnal recessions and wintry slumbers, together with its uniform and close commu nion with scurvy, prove that it is produced and governed by the laws that produce and govern scurvy. Doutless, if the statistics were at hand, that the meteoric phenomena and constitution of the seasons could be appealed to throughout

Europe and the world, the spread of Cholera would appear as the effect of cold winters, droughts, frosts and blights, in all places wherever it has prevailed, and that its ravages would be found in the ratio of the intensity of the causes, remote and exciting, that produce and develop scorbutus.

2. *The classes of persons who are the victims of Cholera, are those subjected to restrictions in diet;* to a routine dietary; to a poor diet; to inactive habits and to confined, foul air; as soldiers in barracks and camp; sailors and boatmen; emigrants or ocean passengers; inmates of poor-houses, hospitals, asylums and prisons; inhabitants of besieged cities; dwellers in all filthy, poverty-stricken, God-forsaken localities of cities; immigrants just disembarked; laborers on public works; and the poorer classes in cities—precisely those who, from time immemorial, have been the victims of scurvy.

3. *Admitting Cholera to be of scorbutic character, all the strange vagaries, attending its history and spread admit of rational explanation,* to wit: its home and habitude in burning India, where the poor live on rice, any one kind of diet without succulent vegetables being sure to produce it; its flourishing in frozen Russia, where the serfs feed on train oil; its march with armies, where the dietary is pork and beans; its breaking out at sea, without the possibility of contagion causing it, where the emigrants live on ship-bread and salted meat; its special regard for immigrants just disembarked, crowded into filthy apartments in confined localities of cities, their blood rendered still more and more scorbutic, by a continued cheap dietary of pork, bread and beans; its recession in autumn, dormancy during winter, vernal reappearance, and summer ravages; and its intensity being in direct ratio to the causes that produce scurvy. In fine, there is not within the writer's knowledge, a circumstance or anomaly in the history or spread of Cholera, that cannot be rationally explained by assuming the disease to be modified scorbutus.

On this assumption it is not only rational but quite explicable, that one family having lived through a cold winter and spring without succulent vegetables, should die the following summer of epidemic Cholera, or whatever form or

modification scurvy may take on, it having always been of Protean character, while the neighboring family, having had meat, fruits and potatoes, should all escape attack; that the feeble and panic-struck should fall first; that the first cases should appear to be the most malignant and die on shortest notice; that a sudden change of food, even vegetables, and boiled cabbage in particular, should appear to produce it; that great summer heat, sudden changes of weather, foul air, etc., should develop it into epidemic form; that it should differ essentially from Cholera morbus; that it should leap from city to city, and let country people generally go free, who raise, store, and consume abundance of potatoes, turnips and other vegetables, apples, peaches, and other fruits, and only send their surplus to market; that it should give New England almost a *carte blanche*, where pot-luck and apples and cider constitute the winter and spring dietary; that it should travel, apparently, as we have seen it described by the date of its outbreaks, in the commercial thoroughfares, along rivers, canals, lakes, etc., and prove most fatal in the cities along those low, flat, cold, damp localities, as Chicago, Sandusky, etc., in which localities vegetables and fruits are not only scarce but of indifferent quality, and the co-operating causes of scorbutus powerful; that a villager not remote from one of those cities, whose vegetable stores had been frosted, on visiting the city when Cholera was raging, should overtask himself in the hurry of business, eat little or nothing through fear and anxiety, sleep disturbedly, see the corpse of one dying of Cholera that night at the hotel, leave for home before breakfast, reach home perfectly exhausted, be taken with Cholera, and die before next morning, two or three of his family and sundry potatoless neighbors "catch it," and follow in quick succession, and a potatoe and turnip, beef and cabbage eating farmer-neighbor hard-by, lay out all the corpses, and not "catch it;" that after killing off the constitutionally feeble, and those who had transgressed most by not eating vegetables, the epidemic should decline, and as vegetables and fruits came in and were more eaten, the later cases should become milder and more manageable; that persons flying from a city or locali-

where the Cholera was raging, should, some of them, be attacked, in whatever locality sought, no matter how high, mountainous, rural or healthful the place, or pure, cool and bracing the air—the cause being in their own veins.

I notice in the *Galena Jeffersonian* newspaper, that the Cholera lately broke out among three hundred laborers on the railroad near Galena, Illinois, quartered on Scale's Mound, four hundred and fifty feet above the level of the Mississippi, the ground dry, the air pure, and no cause to be assigned for its appearance. The laborers were scattered, and down to the date of the notice, over one half of the number had died at the various points reached. The question is asked, "Who can give an explanation of the cause that produced such terrible results? Such results perplex medical science, and put at fault all theories in regard to the phenomena of Cholera."

On this I remark, that assuming Cholera to be a modified form of scorbutus, nothing is easier of explanation than the above awful catastrophe, and every similar result that swells the catalogue of this pestilence, so perplexing to medical science and contradictory to false theories. There are, comparatively, no vegetables and fruits raised in all the mining regions round about Galena, to my personal knowledge, and the scorbutic diathesis is so common a phenomenon there every spring season, that it would be remarkable if absent a single year, and a miracle, almost, if absent this year (1855) of exorbitant prices. The contractor having those three hundred laborers under his care, had quartered them high and healthfully, which fresh air of heaven cost him nothing, but when it came to paying out four or five dollars a bushel for three hundred bushels of potatoes a month, the case was different; besides, the potatoes, or other succulent vegetables, were not to be had at any price in all those regions in May, June, and July; and those three hundred laborers had lived on pork, and beans, and bread, until, prostrated by midsummer heat, modified scorbutus or Cholera broke out; and it broke out in them wherever they went, and slew them as transgressors of the omnivorous law, it mattered not where, whether in the temple of Hygeia, or the garden of Eden:

the transgression has been committed, and the penalty was sure to follow. Nothing short of a potato-patch might save them at that juncture, or an orange grove, which they were sure to miss in all those regions.

Thus, all difficulties vanish, darkness gives way to a fullness of light, every thing is explained on rational principles and by the natural laws—Cholera is in the *system* and not in the *air*, laid there, or produced by violating the law of kindness constituting man OMNIVOROUS, by which his happiness is so much exalted and enhanced: but the law must be fulfilled or the death-penalty will follow. With this key explaining the cause, the nature, and the phenomena attending the outbreak and spread of Cholera, it would now appear mysterious if the phenomena were different and the disease pursued any other course.

4. *The phenomena of Cholera at the bed-side*, with this key in our hands, reveal so plainly the pathognomonic symptoms of scorbutus, that after rubbing the eyes a little, the better to see through the drapery of some false appearances, every pathologist will discover a full length portrait. The great leading phenomenon is *diliquescence*, or a tendency to the liquefaction of the system. Vomiting and purging are but the proofs of what I say, mere accidents. The serum of the blood is thus being passed off. The solids are dissolving and keep up the currents through the bowels and the skin. So in scorbutus, the dissolving of the solids is the prominent feature: hemorrhage, diarrhœa, salivation bear witness. Hemorrhage of all the constituents of the blood is common in scorbutus, hemorrhage of serum only *generally* takes place in Cholera, the structural lesions of the mucous tissues being less deep. The vital powers are at the lowest ebb in both instances, and great emaciation, sudden death, and clearness of intellect till the last, fill up the measure of the leading phenomena in both. Furthermore, cases of Cholera now and then occur where there is neither vomiting nor purging, the mode of death being precisely as in scurvy, after hemorrhage or other shock, the phenomena being sinking, prostration, dyspnœa, gasping, jactitation, and death, with clearness of intellect to the last. The difference in the

symptoms all told, is never half so great or apparent as the difference between the ordinary symptoms of ague and fever, and pernicious fever or congestive chill, which all pathologists hold to be the same disease, produced by the same cause.

5. *The anatomical characters in Cholera* are not less positive in declaring the identity of its pathology with that of scurvy. The great structural lesion which dissection reveals, is *disintegration*, and in particular of the mucous tissues. The epithelium is detached from the internal petechial spots, and passed off by the diarrhœa, constituting the white floculi in the dejections; or it is vesicated in extensively papillated patches; or abraded, but adherent in agglutinated coatings; and these morbid appearances extend not only throughout the gastro-pulmonary, but the genito-urinary branches of the mucous membranes; and patches of *ecchymoses* are often found in the mucous linings of the bowels, and a chocolate-colored fluid as their contents, denoting the oozing out of red blood; and "almost all parts of the body, the brain and spinal marrow, the substance of the heart, the abdominal vicera, the limbs, even the spongy substance of the bones, exhibit signs of venous congestion, and *large ecchymoses* are frequently found in all the parenchymatous glands." (*Wood.*) Now, not to lengthen this article by quotations, precisely the same characters are not only present in scorbutus, but they constitute *the main lesions of structure*, as every pathologist must bear witness, and the ecchymoses spoken of extend very often to the skin, constituting the petechiæ and patches of purpura, so frequently noticed.

6. *The curative and preventive effects of anti-scorbutic treatment in Cholera*, in 1849 and '50, furnished the hints that have led to the investigations which have established the writer's present convictions and conclusions. It will readily be believed therefore that there was some degree or tangible amount of testimony in this way at the bedside, enough, at least, to set the writer thinking, reasoning, reflecting and inquiring. Most, though not all, of the discoveries in Medicine have come in the same way. Some have been the result of the inductive mode of reasoning.

The curative virtues of strychnine in paralysis were inferred from *a priori* reasoning on its physiological effects.

Although scorbutus and Cholera were seen complicated, as then supposed, and domiciliated together "cheek by jowl" in 1849 and '50, in Chicago, where the writer was then practicing, and anti-scorbutics were freely administered, and their happy effects witnessed from day to day, continually, in fact, throughout both epidemics, still they were never relied on *exclusively* after the patient was striken down, for the reason that the writer had then no theory on the subject. The calomel, sugar of lead, and morphine treatment was always combined, or some other empirical resort. The scorbutic diathesis was distinctly seen for many weeks prior to Cholera becoming epidemic, and was treated alone and complicated with the various forms of vernal diseases. In looking back from the writer's present visions of the nature of Cholera, upon the chain of evidences through which clearness of views has come, it is a matter of suprise now that his conclusions should not have been earlier drawn, but such is the "magic of a name," and so powerful are imbibed dogmas in medicine, that the human mind is not left free to interpret rightly the phenomena seen at the bedside.

The anti-scorbutic remedies which the writer now sees were effectual on account of their anti-scorbutic virtues, were the common salt emetic, (chloride of sodium,) which he was continually in the practice of administering as a first remedy, and soda powders throughout the attack. The soda powders were indifferently composed of the bicarbonate of potash or soda, and citric or tartaric acid. The salts of potash and soda, and the vegetable acids named, stand at the head of the list of anti-scorbutic remedies, and the reputed efficacy of common salt in arresting hemorrhage also further explains its value in Cholera. These views also throw light on the success that has attended the saline treatment.

The preventive relied on was punch, (lemonade dashed with brandy,) with five or ten grains of quinine to the quart, and when diarrhœa was present, a grain of morphine was added. This combination was relied on from having observed scorbutus complicated with vernal agues, and midsummer

bilious fevers in the malarious districts of Illinois for nearly twenty years, especially after cold winters, and from the further observed fact, that Cholera delighted in the samo localities, particularly along the Illinois and Michigan canal. The writer could go on and specify numerous instances of the prophylactic effects of the remedy, in families where, one or two members being struck down with Cholera, the balance were put under the daily use of the mixture and anti-scorbutic diet, and escaped attack. Though nearly prostrated by a scorbutic taint, and not as generally expressed by that cloak for our ignorance, the senseless phrase "epidemic influence," their strength and spirits would revive, their tongues become clean, their cholerine cease, their appetites return, and an array of evidences as strong as Holy Writ proclaim their salvation from Cholera by means of the anti-scorbutic preventive.

6. *The analysis of twenty cases of Cholera* observed at Pittsburg, Pa., on the 25th and 26th of September, 1854, chiefly in the Mercy Hospital, contains the crowning testimony that removes all doubt of the correctness of the writer's views, reduces the matter to certainty, theory to knowledge, and incorporates this discovery into the pages of medical literature among the established truths of medical science.

On or about the 15th of September, instant, the Cholera broke out at Pittsburg, Pa., and continued to increase in force for some eight days. On the 23d, the writer repaired to said city, and arrived there late on the evening of the same day (Saturday,) and found the epidemic had begun to decline. The city proper was the chief locality that suffered. In a former visitation, the town of Birmingham, south of Pittsburg, across the Monongahela river, suffered most.

The epidemic commenced with great suddenness, after heavy showers of rain with thunder and lightning, and the sinking of the mercury in the thermometer from 90 degrees to 65 degrees F. in a single night. It broke out that night in every ward in the city, showing conclusively that it obeyed some law other than that of contagion or portability. There had occurred some half a dozen cases at the southwest end of the city prior to that night; but on that night

forty cases or more occurred in the most widely scattered manner. It struck down the feeblest member or members of whatever family it touched, and about three-fourths of all who perished during the epidemic were women—principally mothers. It did not spread through or destroy whole families as it often does, but seemed satisfied to take the weakly and debilitated only. It increased in force for something over a week, say ten days from the first reported deaths, when the mortality reached to over one hundred deaths a day, in a population of some 60,000 souls. The crisis of the epidemic occurred under an equable temperature of about 70 degrees F., and the abatement or decline was rapid, the weather holding pleasant.

The topography of Pittsburg is such that the extremest impressions of heat and cold must inevitably rest on the city proper. Other things being equal therefore, Cholera should break out there before either in Birmingham or Alleghany City. The city proper, lying in the forks of the Alleghany and Monongahela rivers, is of the shape of an obtuse heater, or spread fan, with the point south-west. The surface rises to hills soon north-eastwardly, so that the sun's rays at two o'clock, P. M., are direct upon the face of the city. Underneath the hills skirting either river, is a narrow strip of low ground, and the strip along the Alleghany, bounding the city on the west, constitutes the fifth ward, and is exposed to the direct rays of the whole afternoon sun, and reflection from the cut and quarried hills back of it, heating it like an oven. This ward is populated wholly by the poorer classes and operatives in the iron manufactories. The Cholera was ten to one the most severe and fatal in this ward. Still it raged on the high grounds of the city also, which lack not for direct insolation, and are most reduced in temperature by upward radiation and cooling breezes at night. Alleghany City and also Birmingham are more protected by the hills from the direct rays of the sun than Pittsburg, and Alleghany City in particular appears to enjoy a further advantage, in its better adaption to the culture of vegetables and fruits.

Having ascribed the general prevalence of Cholera this

season to the exorbitant prices of provisions, I will here present the prices of the Pittsburg market, furnished me by Mr. C——, proprietor of the Monongahela House. "Beef, 11 cents per pound; mutton. 8 cents per pound; lamb, 75 cents per quarter; chickens, 31 to 50 cents per pair; butter, 45 to 75 cents per pound; eggs, 14 to 20 cents per dozen; Irish potatoes, $2.50 to $3.00 per bushel; sweet or Carolina potatoes, $2.50 per bushel; tomatoes, all very bad, $1.50 to $2.00 per bushel; corn, (roasting ears,) 25 cents per dozen; onions, $1.25 per bushel; turnips, none in market; apples, $1.50 per bushel. Large quantities of diseased potatoes were sold in market just before the breaking out of Cholera, at $1.25 per bushel. Vegetables generally have been poor."

I visited the markets on the morning of the 26th, and passed through two large and commodious houses, well supplied with choice meats, but not a potato, turnip, tomato, or other succulent vegetable, apple, peach, or other fruit of any description whatever, on sale or to be seen at either market. This is a more forcible commentary on the power and influence of medical opinion for evil than could have been anticipated. It shows very clearly that the prohibition of vegetables and fruits has not been overestimated by the writer as an unfortunate blunder of the profession, protracting and aggravating every epidemic visitation of the disease.

Analysis of Cases.—Case 1.—Monday, September 25, 9 o'clock, A. M., through the courtesy of the Board of Health, visited, with Dr. ——, a middle-aged German woman in the fifth ward, in the collapsed stage of Cholera—the patient speechless, pulseless, senseless, and cold as in death. The case had had no treatment. On examining the mouth, the objective signs of scorbutus were found most unequivocally manifest in a puffy and livid condition of the gums, pale flabby tongue, especially towards the edges, which bore the impressions of the teeth. This was considered a hopeless case, but the punch, with quinine and morphine added, was prescribed, as the patient was not past swallowing. The case terminated fatally in a few hours, and was only instructive as affording testimony of the presence of the scorbutic diathesis in the patient.

On examination of the other members of this family, six in number, all showed the objective signs of scurvy in different degrees, by the crimson line along the dental margin of their gums, their tongues furred centrally, and pale and smooth laterally, paleness of countenance, inertia of feelings, despondency and dejection of spirits. One suckling woman in particular, exhibited the signs of the scorbutic diathesis most prominently of all. They were enjoined to drink punch daily, and to make a free use of vegetables and fruits in their dietary.

Case 2.—Mrs. O'Connell, a young married Irish woman, living in Miltenberger's Alley, was visited at half-past 9 o'clock, A. M. She had had a diarrhœa of two days' standing, which she described as being of characteristic rice-water appearance, and frequent—had vomited a few times only since having thrown off from the stomach, at about 1 o'clock at night, the meats she had eaten for her supper, in a sour, undigested state. Her constitution seemed unimpaired. She was sitting up, but complained of sinking, and great weakness. The pulse was feeble, the skin cool and dry, and the countenance pale.

On looking into this patient's mouth, the most perfectly displayed *early* characteristic signs of scorbutus presented, that it has ever fallen to my lot to witness. The mucous membrane of the entire mouth was pale, the tongue furred centrally, and pale and smooth laterally, the gums *pale* and *contracted*, save and except the most vivid *crimson*, I should say almost *vermillion line*, of less than the sixteenth of an inch in breadth, ornamented their dental margin, inside and out, festooned around every tooth, and the teeth all perfect in each jaw. These characteristic signs of the scorbutic diathesis were examined by Dr.——, who visited the case with me. The following prescription was made:

℞.—Acid. cit. ʒ.—Quinæ Disulph. gr. v.—Morphiæ Sulph. gr. j.—Spt. Vin. Gal. ʒ iv.—Sacch. Alb. ʒ i.—Aquæ. Oij. m. f. sol.

S. Take a wineglassful every fifteen or twenty minutes, according to the urgency of the diarrhœa and vomiting.

The patient was ordered to keep her bed, and to have a pot of soup made by boiling a cut of fresh beef-steak, potatoes, turnips, onions, carrots, etc., together, flavored with savory herbs, and well seasoned with salt and cayenne pepper. This to be partaken of freely, and as hot as it could be supped, at the earliest moment it could be prepared. At 12 o'clock, M., the patient was visited again: she had followed directions, had taken the medicine several times, and supped a small bowl of soup. All disposition to vomit had ceased—the diarrhœa was much less urgent, and although no reaction was yet apparent, it was evident the case was doing well. Medicine and soup to be continued. At 2 o'clock, P. M., saw the patient again, and found her in a gentle glow; the skin soft and moist, the pulse full, the diarrhœa entirely checked, and feelings of perfect ease and general comfort were manifested by the patient.

At 9 o'clock on the following morning visited the patient again, in company with the physician in ordinary, and found her up and making her bed, feeling well. She expressed the greatest joy in being allowed the free use of vegetables and fruits. On examining the mouth, the crimson line at the margin of the gums was greatly faded. The husband and an unmarried sister of the patient exhibited none of the objective signs of scorbutus.

Case 3.—Passing up Smithfield street, saw a young man in an alley vomiting. Took him to the office of the Board of Health near, and examined his mouth with Dr.——; find it in a very scorbutic state—tongue furred centrally, pale laterally, and *the gums puffy and livid all over.* He has had diarrhœa two days, and has taken two or three glasses of brandy this morning to check it—is partially inebriated. He refuses to take medicine if prescribed, finally consents to take a glass of soda water and suck a lemon. This case not seen afterwards, and is only presented as disclosing the objective signs of scurvy in cholerine.

On the morning of the 26th, I repaired to the Mercy Hospital, bearing a note from the Rt. Rev. Dr.——, desiring that I might be facilitated in making medical investigations in the Institution. Every facility was thus obtained, and

marked facilities shown me by the Sisters of Mercy, and the visiting physician, (no resident physician then in the Hospital) who arrived soon, and went his morning round, giving me a hurried history of the cases in the Cholera ward, and leaving me to investigate them at my leisure. My views of the nature of Cholera were briefly explained to the physician before he left the house, with the request that he would make observations, and test the value of anti-scorbutic treatment. Five consecutive hours were then spent in examining the following cases, comprising *all* the Cholera patients in the Hospital under treatment, and one in the convalescent ward. All the cases were admitted under fully developed Cholera, bordering on, if not in callapse, as per the testimony of the physician.

Case 4.— Cornelius Shanahan, aged 20, admitted a week since, now convalescent, mercurial odor present—the gums are spongy, swollen, and livid all over—petechiæ, in the early efflorescent stage, sparsely scattered over the sides of the neck and arms—skin on the outer sides of the arms and legs, and also the palms of the hands, covered with white furfuraceous scurf—the lividity and swollen condition of the gums far exceed that which should result from the slight ptyalism present—no salvation or spitting—patient says he has eaten little or no vegetable food this season.

Case 5.—Mrs. Mary McStay, aged 28, has an infant at the breast, attacked two days since, admitted yesterday—four cases of Cholera occurred in the house where she boarded—thinks there was a reasonable supply of vegetable food—dejections not watery or copious, and not vomiting—patient not emaciated—not much Cholera aspect in this case—no mercurial odor. It should be observed that the treatment of the Cholera cases is routine—all the patients are put under the administration of two grains of calomel, combined with opium, quinine and capsicum, every two hours, or until vomiting and purging cease. Of course the appearances in this patient's mouth are not modified by the effects of mercury, having been less than one day under treatment. On inspecting the mouth, I find the tongue coated with yellowish-white fur, and the sides red and granular-looking, or rough

—there is an intensely red line along the dental margin of the gums, and they are beginning to assume a red and softened appearance all over—no petechiæ or abnormal appearances on the skin. A bilious-cholera-scurvy case, lactation aiding its development, and a panic bringing it forth too soon.

Case 6.—Louisa Hines, aged 17, admitted a week since—is from the County Jail; which, it appears, is made use of as a Penitentiary, *alias*, House of Starvation, where she had been confined three months on bread and water, and soup twice a week—the jail fare—no potatoes, turnips, cabbages, or other vegetables, nor fruits of any description allowed! The Cholera, of course, broke out in this prison, and a general jail delivery ensued. Many of the cases came to the Mercy Hospital, and Louisa is one of three only that remain alive! The prison is certainly a disgrace to the City, County and State. The constitution of this patient is sound—the skin is normal, and, save paleness of countenance, and the *scorbutic crimson line* tied around the teeth, this patient appears otherwise all right. There is no ptyalism or mercurial odor—the gums are *pale and contracted*, except at their dental margins, and the mucous membrane of the mouth generally is very pale. These appearances are *pathognomonic* of the early stage of scurvy.

Case 7.—Mary Ann Groff, an old German woman—but a few weeks in America—husband and son have died of Cholera in this epidemic. This old lady has only two teeth in her mouth; her system is not in the least affected by mercury; but the gums surrounding her two teeth are puffed up fully a quarter of an inch thick—the rim of the edentulous gums is normal—the tongue is furred on the centre of the dorsum, and very pale and flabby laterally—skin dry and scurfy—red petechiæ on both legs, and discolorations of fading purpura all over the calves—many minute red petechiæ on arms, and skin generally.

Case 8.—Mrs. Myers, aged 45, a butcher's wife—husband has had Cholera, and is now in the convalescent ward. This patient is corpulent, (as a butcher's wife should be,) and insensible from congestion of the brain—under treatment

six days—no ptyalism or mercurial odor—gums swollen and puffed up half as thick as my finger, and livid as a piece of liver—skin all over the body, especially limbs and back, besprinkled and bespattered with petuchiæ, and bloody chops, which ramify extensively in zigzag bundles and fantastic spangles and clusters, interspersed with large ecchymoses or patches of purpura. In numerous places the blood has oozed through the chops or cracks, and can be scratched off with the nail in the form of dried blood scabs. The purpura patches, or ecchymoses, on this patient's legs, are as large as my hand, and of bacon-rind or mummified appearance. Here is scurvy in a fat subject produced by meat eating; and when the serum of the blood was leaking through the chops in the mucous tissue of the stomach and bowels, and being vomited and purged off, it was a case of Cholera.

Case 9.—Isabella Merritt, aged 25—the dietary of this patient has been bread, meat, and coffee generally—seldom eats any vegetables—has had excessive palpitation of the heart, and weakness for a year—has not eaten any vegetables or fruits of any description for more than three months past, except cabbage on two occasions—breath betrays a mercurial odor, and her mouth generally, and swollen, livid gums, in particular, give indubitable evidence of the scorbutic diathesis—no petechiæ.

Case 10.—Mary Ellen Daily, aged 25—admitted three days since—has had diarrhœa since early in August—mucous membrane of the mouth chopped and excoriated in patches—gums display the crimson line along the dental margin, but are not yet puffy—recent petechiæ of every size, from mustard seed to buck-shot, are scattered over limbs, face, and body—the petechiæ are perfectly round, not raised or papillated, and not capable of being felt by the touch—they are pale crimson, disappear under pressure of the finger, and return instantly on removal of the pressure—no mercurial odor of the breath—tongue getting dry, with tendency to coma, or typhoid symptoms.

Case 11.—Edward McDowell, aged 28—admitted a week since—is from the jail—was an inmate of the prison fourteen months—has had diarrhœa since February—dietary of the

prison, bread and water, and soup twice a week, Wednesdays and Saturdays; but patient seldom partook of the soup, finding it produced an aggravation of the diarrhœa—an affection of the heart came on after being in the jail five months, which has troubled him ever since—has had great irritation of the throat since February—has picked out five or six of his teeth since April with his fingers—mouth displays the objective signs of scurvy in an eminent degree—there is great pallor of countenance, and a universally anæmic appearance—there are numerous petechiæ on the skin, and the back is mottled with walnut-colored marks of desquamated vibices of the size of buck-shot and rifle-balls, too numerous to count, the epidermis hanging to some of them. In June and July the patient had bloody discharges from the bowels; in May and June vertigo and palpitation were most distressing. The authorities by which the Pittsburg jail is upheld are entitled to a premium for this, the "best" case of Cholera seen.

Case 12.—James Hall, aged 20—admitted two days since—has worked all summer in a brick-yard—has had no potatoes or turnips at all for four weeks, and none, indeed, worth mentioning, for four months—pork and beef, and bread and coffee, have constituted his dietary—skin dry, scurfy, scaly, or furfuraceous, particularly on the extremities—gums very much puffed up, or swelled, and livid as liver—tongue clean and flabby—countenance pale—no petechiæ to be seen on legs or arms, back not examined—no odor of salivation—sound, with the exception of scurvy.

Case 13.—Wm. Campbell, of middle age—admitted on yesterday—insensible from congestion of brain, and I can gain no information as to his mode of life—gums very red and swollen—petechiæ in their red stage sparsely scattered over the limbs and body—Cholera in the last stage—moaning and jactitation and deep sighing—eyes inflamed—face red—has probably been a hard drinker.

Case 14.—John Tammany, aged 28—admitted three days since—has had an ague this (Tuesday) morning, and is now in the sweating stage—no Cholera symptoms present—has worked in an iron furnace in Ohio this season, where all

around him had ague and fever—came to Pittsburg a week since, but had not had a chill for four weeks—wrought one day in Pittsburg, and on the next day, which was Saturday last, was taken with a chill, and vomiting and purging, and was brought to the hospital—says he had good diet in Ohio, meat and potatoes, etc., but not much vegetable food during May, June, and July—in July sickened of billious fever—has had an extensive and troublesome eruption of sores all over his legs, which leaves the skin marbled, and of a dark chocolate or slate color, wherever there has been a sore—a cicatrix of large size on one leg is dark walnut color, or bacon-rind appearance—there are a few petechiæ or flea-bite specks sparsely scattered over his arms, say a dozen on each, well marked—the gums are swollen and livid all over—countenance very pale—no mercurial odor—the objective signs of scorbutus, and the symptoms of a quartan ague, are all the morbid phenomena that are left of this case of Cholera.

Case 15.—Thomas Clennin, aged 30—admitted two days since, or on Sunday—felt sick on Saturday while traveling on foot from Washington, Pa.—thinks he has eaten of new potatoes a few times since they came in; but for five months has lived on ham, eggs, beef, bread, and coffee—mercurial odor in his breath—has lost most of his teeth, and also his palate, which he says occurred five years ago from medical treatment in Baltimore; under mercurial salivation his teeth came out, and his palate sloughed off. The gums surrounding the teeth that remain in this patient's jaws are very puffy and livid—tongue pale and flabby—no petechiæ are visible on arms or legs, back not inspected. A very much broken-down subject—doubtless had scurvy when he suffered the lost of his teeth and palate—says he never had the venereal disease—scurvy and mercury are all that ail him now.

Case 16.—James T. Parsons, aged 32—admitted a week since—came from the jail—was three months there—mouth modified by treatment—tongue red and clean—gums very much swollen and livid, and blood oozes from their dental margins on slight pressure of the finger—breath fœtid, but odor not mercurial—numerous crimson colored petechiæ are scattered over his face, neck and arms, and some of them are

papillated to the touch; large blotches of purpura on the arms.

Case 17.—John Donohue, of middle age—admitted on Friday last—choleric symptoms mild from the first, and soon disappeared—at present there is a universally icteric state—tongue furred in the centre and pale laterally—gums very red and puffy—no mercurial odor—no petechiæ on arms or legs—back not inspected. Jaundice and scurvy are all that are visible, and the former is not more characterized by the pathognomony of the skin, than the latter of the gums.

Case 18.—George Brandstatter a German immigrant of about 50 years of age, just arrived in this country—admitted on yesterday—objective signs of scurvy very prominent in this patient's mouth, as seen in the livid spongy gums, and pale flabby tongue—no petechiæ on arms or legs, back not inspected. This patient is vomiting and purging still, and is sinking rapidly into the stage of collapse—would be gratified to put him under the administration of the hot punch and hot soups, or the rational treatment, to staunch the hemorrhage and afford materials for new and healthy blood, but cannot interfere.

I must here pay a merited tribute to the Choir Sisters who officiate in this hospital. One or other of the three, all evidencing the highest order of intelligence, insists on accompanying me at the bed of every patient, to give the history of the cases, uncover the limbs and back for inspection, and in every way facilitate my investigations.

Case 19.—John Wheely, aged 21—a German immigrant just arrived—admitted on yesterday—still vomiting and purging—gums very red and puffy all over—tongue furred centrally and pale laterally—no petechiæ discernible.

Case 20.—C. J. Smith, a young man from New York—admitted over a week since—he is now in the convalescent ward, having surmounted the hemorrhagic tendency of the disease that gives rise to vomiting and purging, yet is in no other sense cured—his gums are frightfully abnormal in appearance—look as if beaten and bruised and puffed up from the injury—the tongue is clean and red, the mouth throughout modified by treatment—general appearance very anæmic.

The dietary allowed the convalescents is milk and bread, and soups, with rice, but without succulent vegetables. This young man came to Pittsburg about two months since, and has hardly partaken of any succulent vegetable food since he arrived here. Several other convalescent Cholera patients whom I have examined in this ward, exhibit the same objective signs of scorbutus in an eminent degree, and their history prior to admission discloses the same absence of succulent vegetable food in their dietary. It is unneccessary to detail these cases.

Remarks.—The analysis of twenty cases of Cholera, then, discloses the fact, that every case was a case of scurvy, not a solitary exception, in, or out of the hospital, comprising *all* seen. This is a remarkable announcement; nevertheless, remarkable as it may seem, every word of it is truth. Had not the physical evidences of scurvy been present in *every* case, I should have marveled. The appearances which I have described will be found in all cases of true Cholera, and will henceforth be noticed by all practitioners in all parts of the world. Why they have been so long overlooked, (why they should have escaped my observation heretofore, *generally*, and where noticed in 1849 and '50, a complication of diseases should have been inferred,) is a matter of as much astonishment to me as it can possible be to others: but such are the facts. Why, I have now been made the humble instrument of explaining the matter, is doubtless due to circumstances rather than to extraordinary penetration, or superior professional attainments. It has been a hard and difficult task to divest my mind of the false notion of some specific, poisonous influence, *overlaying* scurvy, even since I have been fully aware of the scorbutic diathesis *underlaying* Cholera. It may be difficult for others, even yet, to see clearly: but if, as appears by our analysis, every case of Cholera occurs in a scorbutic subject, or in other words, that Cholera is a messenger of death, riding *always* on the time-honored steed scorbutus, it matters but little what be the theory as to the office or entity of the messenger—if we destroy the steed, the rider will get on but poorly. This we know how to do. But I can see no occasion now to search for further cause of Cholera

than the causes producing scurvy, no phenomena in Cholera other than what harmonize with the known laws of scurvy, and nothing at the bed-side after the hemorrhagic action is arrested but the physical evidences of scurvy, neither do the books describe any anatomical lesions contradictory to this view.

Conclusion.—In conclusion, if I have not explained every thing pertaining to the subject in this brief monograph, I have given the key that will explain every thing when the laws of scurvy shall be perfectly understood, and it is a consoling reflection that nations, cities and families can hereafter enjoy protection or immunity from the scourge of epidemic Cholera, by simple conforming to the natural laws in regard to diet. The proofs presented, that Cholera is a modified form of scorbutus, are as strong as physical proofs can be, or as strong as inductive reasoning can present; as strong as that the sun is the centre of the solar system, and that the earth and the other planets revolve around it: all the phenomena admit of explanation by the theory—the theory tested by practice proves effectual. *Why* scurvy is thus modified, (it always was a Protcus), has constituted no part of these researches. This will be a subject for further reflection with the writer. The laws of scurvy have yet to be investigated by modern observations, researches and statistics. The scorbutic diathesis may yet be found to hold a more special relation to *all the zymotic diseases* than has heretofore been suspected. Medical meterology, or the constitution of the seasons, (abridgment of the crops and fruits by blights,) holds a direct relation with the state of the public hygiene; and it is to this *tangible* cause of disease, and not to an imaginary *malaria*, that we are to turn in search of the laws governing epidemics. With a rational pathology, treatment and prevention made known, Cholera is divested of all its terrors. Sanitary regulations can now be instituted that shall meet its invasions at the very threshold—in ship, camp, or city, and the public mind be so indoctrinated by suitable publications on the subject, that every family may know in what constitutes its safety; in fine, the true philosophy so disseminated, that the wayfaring man, though a fool, need not err therein.

APPENDIX.

EXTRACTS FROM BRITISH JOURNALS.

BLIGHTS AND CHOLERA.—In *Ranking's Abstract, January*, 1854, *p.* 219, will be found the following notice of blight in vegetation coincident with Cholera, corroborating my theory:

"The swarms of flies which have been noticed at Newcastle, during the present epidemic, and which were noticed in the epidemic of 1832 at Montreal, seem to mark one phase of that *blight in vegetation and murrain among cattle*, which has preceded the Cholera scourge, and which still attends upon it."

The following establishes the coincidence of blight and pestilence.

"The coincidence of *blight* with pestilence has been recorded from ancient times, and the wide spread *potatoe disease*, which has now extended to almost every region of the globe, concurrently with the presence of the influenza and cholera poisons in the air, may possibly be a modern instance of it."—(*Report on Quarantine, London*, 1849, *p.*14.)

The course of nature—the annual revolution of the earth—is governed by laws more or less favorable to the perfect development, or the perfection of vegetable life; and imperfection, decay and death of vegetation inhere also in those laws. It is morally impossible it could be otherwise. Deity could not carry out the law of the seasons, and the succession of vegetable and animal life by natural causes otherwise. Imperfect vegetation leaves the lower orders of animals and man on defective alimentation; and thus inlays latent disease, to be developed under excessive impressions of the meteoric vital stimulants. Hence the coincidence in all time of blight and pestilence, the latter following, as the tides follow the moon's southing; and yet the exciting causes—ardent meteoric impressions must concur to develop fully the epidemic phenomena. The cause of blights, then, is chargeable to the laws of nature, and Cholera to blights. I am aware that Diemerbroeck, Webster,* and perhaps others, charge

* See Webster on Pestilence, vol. ii. p. 128.

blights, sickness in animals, and epidemics in men, all to some unknown, mysterious, common cause, as the influence of comets, ect.; but my observations do not warrant this inference, nor do I think such views truthful, philosophic, or calculated to advance medical science.

Acid Treatment of Cholera.—In the same No. of *Ranking's Abstract, page* 222-24, noticing the treatment of Cholera down to that time, the Editor remarks as follows:—

"The treatment by sulphuric acid, however, is that which seems to be of greatest promise. This treatment we have tested to a considerable extent at the Westminster Hospital, with half-drachm doses of dilute sulphuric acid, with a drachm of the compound tincture of cardamoms, and a little peppermint water, and the result has been almost immediately beneficial. The constant answer of the patient has been, that the first dose relieved and the second or third stayed the complaint. * * Nor is this practice quite empirical, for if this acid acts beneficially in hemorrhage, it may be supposed to act similarly in Cholera, the serous discharge of which may be called a *white blood hemorrhage.*—[Editor's italics.] Several writers have called attention to this acid treatment during the last half year, particularly Dr. Fuller, (*Medical Times and Gazette, Oct.* 1, 1853.) Dr. Fuller says:

"My own conviction is, that in sulphuric acid we have an antidote—a specific against choleric diarrhœa, if not against the worst forms of Cholera, as powerful, as energetic, and as certain in its effect, as in cinchona bark or quinia against a paroxysm of ague.

"The effects produced by this remedy are very remarkable. Sometimes after the second dose, more commonly after the third, and almost always after the fourth dose of the medicine, the patient experiences a grateful sense of warmth at the epigastrium; heat returns to the extremities; the nausea and vomiting immediately cease; the purging is stayed; the cramps subside; and the countenance resumes its natural appearance."

The above will suffice to show the efficacy of the acid treatment of Cholera, although much more could be added from the British journals, corroborating the fact; and the rational explanation is afforded by my views of the *scorbutic nature* of Cholera.

Cholera and Scurvy.—Further and most striking corroboration of the truth of my views of the scorbutic nature of Cholera, is found in the able paper of Mr. Thom, published in the *Medical Times* in 1848, from observations made at Kurrachee, India, while surgeon to her Majesty's 86th regiment. I quote three of his paragraphs:

"*Latent condition of Cholera.*—The state of the system referred to, as resultant on chemical change of the constituents of the air, in which carbon is accumulated in the blood and fibrin, and albumen diminished, will vary in degree according to idiosyncrasies, habits, and constitution, so that certain numbers of a community will be afflicted to an extent bordering on, or breaking out, into open disease. Noxious agencies, whether of atmospheric origin, acting on the skin and lungs, or as poison introduced through the assimilating functions, when applied in a minute degree, but steadily kept up for a length of time, have a tendency to produce effects that are called accumulative. Their action is latent, but not the less certain, till all of a sudden it is developed as if the whole had been suddenly concentrated into one overwhelming dose.

"*Connection with Scurvy.*—The scorbutic diathesis furnishes a forcible example of this; and sudden death is not only induced by slight causes of excitement, in men laboring under it, but even those who have exhibited no alarming signs have been equally affected. This is exceedingly applicable to Cholera, between which and scurvy there is a great analogy in the state of the blood; and on Cholera subsiding, the scurvy appeared in our regiment, and also in other corps.

"*Sudden Climax of Accumulative Morbid Changes.*—If, then, by a sudden increase of all the causes of this latent diathesis, a state of weather inducing universal congestion almost approaching to obstruction of the vascular system occur, can we be astonished that life will, in many, be abruptly cut short, as if some lethiferous draught had been swallowed? Such, I am firmly persuaded, is the only rational way of accounting for those numerous cases of Cholera which terminated fatally in a few hours, without those symptoms which nature usually exhibits in a salutary effort to remove local or general congestion.—(*Medical Times, March*, 11, 1848, *page* 388—*Epitomised in Ranking's Abstract.)*

Whoever reads the above attentively, must either adopt Mr. Thom's view, that there is a *choleric diathesis* so much like the scorbutic, that its accumulation in the system, latent condition, and sudden law of collapse, are so similar, that no one can diagnose clearly between them, or my view, that Cholera is scurvy: it is either some great analogous evil, or it is the same thing a little varied in aspect. The reader must judge which is the more probable view. I marvel that Mr. Thom did not identify Cholera and scurvy.

LATE OBSERVATIONS.

The year 1854 will be long remembered in the United States, as a year of scarcity and high prices of provisions. The summer was hot and dry, and Cholera was epidemic or subepidemic in most of the cities and many of the villages. The objective signs of the scorbutic diathesis were apparent in the mouths of most persons whom I examined during the summer, fall, and succeeding winter, which was a hard one; and in the spring of the present year, 1855, land scurvy was very prevalent all over the Western States, at least. When the spring opened, and warm weather set in, the Cholera began to appear, and some cases occurred even in the winter. The weather was hot in May for that month, and in boats on the Mississippi river; among emigrants; in the river towns; in the extreme Western new settlements of Missouri and Kansas; and especially at New Orleans; the Cholera broke out and raged epidemically. The months of June and July were cool and equable, the thermometer never indicating over 88 degrees F. in the shade in my sleeping apartment, southern exposure, second story, during the entire two months; and refreshing showers of rain watered and cooled the earth from time to time, and caused unexampled crops

of early summer vegetables and fruits, unprecedented in the annals of our country, both as to quantity and excellence of quality, to greet the longing appetites of everybody. Cholera began to abate under this state of the healing virtues of succulent vegetables and fruits, and mild, equable, summer temperature. Cases of Cholera, however, are now, second week in August, of every day occurrence in Cincinnati and vicinity. Four deaths occurred in one day of last week at the Commercial Hospital. I went hastily through some of the wards of that institution early in July, and saw many cases of scorbutus; I was through the jail in May, and noticed that the objective signs of latent scorbutus were general in that prison. Lexington, Ky., and many other towns in this region, have suffered more or less from Cholera. Last week it was announced in the public prints that the Cholera had broken out in the Insane Asylum at Lexington; some ten or twelve deaths suddenly occurring. Wherever it has appeared, it has been very mortal. Not only Cholera but Yellow Fever has appeared epidemically at New Orleans, and some of the cities on the Atlantic coast, sufficient to give the hint, at least, that this fell scourge may also be a scorbutic fever, depending for its cause remotely on defective alimentation also. The black vomit that so especially characterizes it, rather favors the idea, it being a *gastric hemorrhage* undoubtedly. Still, as I have never seen a case of this disease, nor tested the efficacy of the acid treatment, this suggestion is offered only as a suggestion.

Now, in this brief recital of the constitution of the past year and present summer, who does not see the strongest corroborating evidences of the truth of my theory? Latent scurvy or Cholera has been seen lying broad-cast all over the land since early in the spring, and in some places, as at Jefferson Barracks, the supposed two diseases, but really only different modes of manifestation of the same disease, broke out simultaneously in epidemic form among the recruits, about the 10th of May, thermometer at about ninety degrees F., but was soon subdued. An unheard-of abundance of West India fruits, oranges and lemons, at a cent a piece, greeted us early in the spring, followed, as has been said, by a flush of all kinds of native fruits and vegetables in their season, of the very best quality, to the reduction of the price of potatoes, the grand succulent staple, from two dollars to forty cents, the present price per bushel, and all else in like proportion, the meteoric exciting causes of disease holding of the mildest and most equable character thus far; no sudden changes; no remarkable variations of weather

or vicissitudes of temperature; abundant rains at reasonable intervals; medium flowing rivers; harvests astonishingly fine; in a word, a year of plenty to heal the scorbutic million, or, at least, stay for this season its wide-spread and general epidemic manifestation. Still some are seized with the "white blood hemorrhage" notwithstanding. Here and there occurs a case of Cholera in the practice of almost every physician. Eighty-eight deaths last week from Cholera in Cincinnati, in a population of probably 180,000: subepidemic at least. In this state of things, I urge it upon the attention of those physicians whom I meet, to take note of the state of the gums, and tissues of the mouth and throat, in every Cholera case, and to try the anti-scorbutic treatment, viz, acids, soda powders, punch, whey, soups, etc., *ad libitum*, combining a little morphine and quinine with the punch. This course proves successful in my practice, and that of other physicians so far as tried.

CASES AND DEDUCTIONS.

CASE 1.—This case was handed to me by a friend, a veteran practitioner in this city, who practiced here through the Cholera epidemic of 1832, and who moreover received my views, when first announced, as visionary.

"CINCINNATI, *March* 22, 1855.

"Dr. KNAPP, DEAR SIR.—The following very briefly drawn up case, of recent occurrence in my practice, I deem in unison in its results, with the theory I heard you advance in a paper read before the Medical Society of this city.

"Feb. 23, Was called to see Mrs.——,age 38, mother of five or six children, youngest still nursing, one year old. Patient is laboring under a severe form of granular conjunctivitis of some weeks standing—had been under medical treatment previously—is of rather cachectic habit.

"Feb. 26, 10 o'clock A. M., found my patient laboring under chronic diarrhœa, now suddenly aggravated—some half dozen stools during the night, and as many more by 10 o'clock this morning, of a strongly marked Cholera nature, viz., of rice water appearance, and the peculiar fœtid odor of the worst cases of Cholera as it appeared in this city in 1832. Pulse small and feeble: countenance sunken; skin bedewed with cold clammy perspiration; great pain and colicky cramps in the bowels; in fine, symtoms verging to a state of collapse.

"Directed of sulphate of morphia one-eight of a grain; and sulphate of quinine two grains, in solution to be given every hour until the bowels should be checked, and quietness induced; and the patient to drink of hot whiskey punch, and fresh lemonade *ad libitum;* to have stimulating frictions to the skin; to observe the recumbent posture, even at stool; and at the same time to drink freely of highly seasoned animal and vegetable soup.

"At 2 o'clock P, M., found my patient resting quietly—diarrhœa perfectly arrested—morphine and quinine omitted—continue lemonade and soup.

"Feb. 27, Slight return of diarrhœa this morning, but relieved by repeating prescription, with punch and soup diet continued. Convalescence was rapid under this course and permanent. "Very Truly, Yours, etc.

F. A. WALDO."

The above scorbutic case is very similar to some that fell under my observation at about the same date. There oc-

curred a very mild state of weather for some two weeks in February, followed by sudden and severe cold, repelling the fluids in, upon the internal capillaries, and the consequence was a white blood hemorrhage from the bowels, in many of the scorbutic poor.

Case 2.—This was one of them, and occurred in a nursing, poor woman, who, together with a suddenly aggravated chronic diarrhœa of the fœtid, rice water character seen in Cholera, had a conjunctivitis of the eyes that would have eclipsed any eyes for redness seen in the last or comatose stage of Cholera. I treated the case with the sourest kind of whiskey punch, morphine, and potatoes; one ounce of tartaric acid to a quart of Ohio whiskey, five grains of quiuiue, and two of morphine, used *ad libitum*, with either hot or cold sweetened water—potatoes and milk diet. From being bed-rid and blind three weeks, she was up and about in ten days, and the eyes gradually recovered their whiteness without any local applications whatever. Scorbutic sore eyes that baffle the skill of all who misjudge or overlook the constitutional seat of the ailment, are common. This case, as also that of Dr. Waldo's, was, in my judgment, a case of *nursing sore eyes*, naming the disease, as is fashionable, from the most striking symptom—Cholera, when the bowels were rapidly ruuuing off with rice water discharges—but scurvy wheu generalized to its root. The objective signs of scorbutus were prominent in the mouth—tumid gums, and tongue red and sore at the tip.

Case 3.—I was called June 13 to atteud Mary C——, an Irish servant girl age 20. Found her vomiting and purging, and laboring under great epigastric oppression, and much general distress. The discharges were not copious, but of rice water appearance, and the vomiting occurred only at loug intervals. Nausea was constant, and drinks were ejected with much retching. She had had diarrhœa for a week, which had baffled all the domestic remedies, and vomiting supervened the evening before I was called. There was palor; a weak pulse; moist, pale, flabby tongue, slightly furred on the dorsum; and hyperæmia of the gums and arches of the palate. On askiug her what she most craved, she replied "something sour." I ordered a pint of lemon juice and a pint of whiskey, with two grains of morphine and two of quinine mixed, and a table spoonful to be taken in a little ice water sweetened, every half hour, till the irritability of the stomach, and bowels was quieted. She retaiued these potions; had no more vomiting; and the diarrhœa ceased in a few hours. The following day she took and retained boiled milk and soup; and on the third day partook of solid vegetable food and stewed fruits of the seasou. She was ordered to coutinue the medicine three times a day, and to make use of vegetables and fruits, and to drink freely of lemonade daily. Under this course she gradually recovered her strength and returned to service. This was evidently a case of scurvy that took on the choleric form, symptoms not unusual, as we shall see in the sequel.

Case 4.—Summoned June 14 to attend Mrs. A——, a nursing Irish woman, attacked with well marked ague. The rigor had lasted a full hour, and I found her in the hot stage, laboring under great epigastric oppression, and the universal distress common in such cases. It being a very plain case, I prescribed accordiug to routiue usage in such cases, viz, fifteen grains of quinine and oue-fourth of a grain of morphine to be takeu instanter. In an hour she was in a full sweat, which lasted twelve hours, and left her free of fever, but very weak, so weak she thought she was dying, and so sent for her confessor. On examining her mouth next day, I found that the gums betrayed the crimson line along the dental margin; that the tongue was sore; the buccal surfaces papillated with numerous pustules in patches; that the fauces were highly crimsoned; and all needful objective signs of scurvy present—a nursing sore mouth case, to all intents and purposes. I put her on acids, tonics, and a fresh, succulent, vegetable diet, and ceased to look after her, as she was able to rise and walk about house, and the husband fidgety in view of a medical bill.

Six weeks subsequently, a short time since, she accosted me on the street and related to me her narrow escape from death by an attack of Cholera. She said she suffered from diarrhœa two days, when vomiting came on in the night time, and was violent till morning, when it began to abate under her domestic remedy, and soon ceased. The remedy was *sour whey*, made by mixing sour buttermilk and boiled sweet milk together, and pouring off the whey. This she drank freely, and as hot as she could sup it. She described it as being exceedingly grateful in quenching her thirst, and said it finally stopped the vomiting and purging. This was her account, and I have no reason to doubt the truth of her simple narration of facts. I examined her mouth, found she had scurvy still, took her to my office, and prescribed for her, and her infant six months old, laboring under it also.

This is, indeed, a very instructive case. Four diseases, nosologically, atop of one another; viz.: scurvy; intermittent fever; nursing sore mouth; and Cholera. No comments I can make upon it will, perhaps, have the same force as the following remarks of Dr. Barnes on scurvy as he finds it masked by other diseases in the London Hospital:

"Marked cases of scurvy are not, perhaps, numerous in London; but minor degrees of the scorbutic condition may be detected on careful inquiry and observation. Patients so affected present themselves at the hospitals, complaining of various ailments, such as rheumatism, fever, gastralgia, debility, hemorrhages, dysentery, etc., the scorbutic taint being masked by the more prominent disease. Dr. Barnes regards it as certain, that if these more prominent diseases have not in all cases arisen as secondary affections upon the scorbutic degradation of the blood, yet that their nature and course are so modified by this complication, that it is necessary to take the scorbutic taint into consideration in prescribing the treatment. Good diet becomes a most indispensable point, without which the ordinary medicinal agents can affect little. It was an observation of Commodore Anson, which has been confirmed by modern experience, that those who are debilitated by advanced or immature age, or previous disease, are most prone to fall into a scorbutic condition. The children at the well known school at Tooting were mostly disposed to scurvy from bad diet before the cholera broke out amongst them. [Hear.] * * It is well known that the deaths of thousands of soldiers, registered as owing to fever, rheumatism, pneumonia, and other causes, are in reality to be ascribed, if we ascend to the primary pathological conditions, rather to scurvy, [hear,] a condition upon which the fever, rheumatism, and other immediately fatal diseases, are but epiphenomena." [Hear, hear.] (*London Lancet, June*, 1855.

Then, according to Dr. Barnes, of the London Hospital, the case I have just related must be regarded scurvy at the base, the real "primary pathological condition" to be prescribed and dieted for, as a *sine qua non* in the treatment, and all above it a masquerade; or, in other words so much nosology; that is, the intermittent fever, nursing sore mouth, and Cholera, were extraordinary *top symptoms* of scurvy; more conveniently and properly classed as diseases perhaps, since the course and symptoms are so unlike ordinary scurvy; but equivocally advantageous to the interests of medical science and humanity, if the dignity of names is made to obscure the primeval pathology, and wholly sink the cue to the remote etiology—defective alimentation. Dr.

Barnes' application of the principle to the Tooting children is an illustration of my views precisely. Upwards of a thousand pauper children were in that establishment, "*disposed to scurvy from bad diet before the cholera broke out amongst them*" in 1848, after the potato blight and general scarcity that prevailed throughout Great Britain during the times of the Irish famine; and some 300 or more of them took on the scorbutic or white blood hemorrhage, and died of cholera—epi-phenomena of the scorbutic, pathological condition, according to Dr. Barnes, June 1855—A hemorrhagic termination, or the dying phenomena of scorbutus, as I explained the matter a year ago, August, 1854.

Now these views of Dr. Barnes, based on observation and therapeutics in the London Hospital, are too important to be lightly passed over by the profession; and running parallel with my views and observations in diagnosing and treating Cholera as scurvy, it would seem that these new views should have been entitled to anything under the name of criticism rather than the attempts at ridicule which some wise editors have seen fit to bestow. However, if the subject is one to justify ridicule—if researches in medical science by any member of the profession are ridiculous—if original views on the grave subject of cholera, based on facts and observations, are in the opinion of some journalist reviewers matters worthy of being ridiculed and laughed at, so be it: I should expect in the next place to see them deriding virtue of any kind.

It is to be observed that I do not enter a special plea *in this essay* for any disease being of scorbutic character but Cholera. I am treating of that subject solely, and do not care to complicate it. It will appear, however, before I close, that, not only the choleric phenomena, but also the symptoms by which some other diseases are characterized, are but *epi-phenomena* of scurvy according to the old authors, as well as Dr. Barnes of the London Hospital. At all events, I think I shall be able to show by ancient and modern authors that scurvy is not greatly modified, after all, as manifested in Cholera.

Case 5.—Common cider vinegar, drunk undiluted, has, in one case of severe vomiting and purging that has fallen under my observation this summer, occurring in an apparently healthy youth, and which I held to be Cholera morbus, proved an effectual remedy. It is the opinion of some physicians that Cholera and cholera morbus are the same. I have assumed in the body of this essay that these affections are essentially different; that the former is a scorbutic affection, and the latter an accidental irritation, caused by a surfeit or offending ingesta; just as we can excite the affection by tartar emetic, in a person in health. Still I may be in error; and the case cured by vinegar will then stand as another proof of the efficacy of the acid treatment in Cholera, and corroborative of its scorbutic nature.

Case 6.—My friend, Dr. Waldo, has just informed me of a very recent case of Cholera, cured under his observation by *hot whisky punch and nutrition.* The case was in the profoundest collapse, and deemed hopeless, when the Dr. suggested the punch and soup treatment. This was in the evening. In three hours time reaction began, and on the following morning the girl was able to converse; had no more vomiting or purging; and speedily got up on a continuance of acid drinks, and proper nutrition.

Case 7.—July the 4th, called towards evening to attend a laborer, whom I found in the collapsed stage of Cholera, pulseless and blue as an indigo bag. Soon after I entered the room, he crept on his hands and knees from his pallet on the floor to the chamber-pot, and after discharging a pint or so of rice water fluid, and being helped back to his couch, immediately expired. His gums in death showed no lividity or evidences of scorbutic softening; and I have noticed that the gum symptoms have been wanting in some other fatal cases of Cholera.

Some practitioners, under whose observation cases of Cholera have occurred this season, have said to me that they detected no evidences of the scorbutic diathesis in the mouth —none of the objective signs of scurvy. By reference to cases No. 2 and 6, in the body of this essay, it will be seen that the gums were pale and contracted, and the tissues of the mouth generally very pale; nothing but a very fine red line along the dental margin of the gums, liable to be overlooked by a casual observer, gave any evidence whatever of the scorbutic diathesis; and this, it should be borne in mind, is indicative of the hemorrhagic tendency, and not a manifestation of puffiness and softening; and may, for aught I know, disappear in the stage of collapse, after the patient is bled to death, as it were. The red line would naturally enough vanish under such loss of blood, and no evidence of scurvy whatever remain. It becomes a matter of importance, therefore, to know what is the state of the gums in the different stages of scurvy; and also to understand that the white blood hemorrhage may set in, and carry off the patient before the scorbutic diathesis has been present long enough to produce tumefaction of the gums. On these important points I am happy that I am not left without authorities, both ancient and modern.

Dr. Shapter, of Exeter, England, says, (*Provincial Med. and Surg. Journ., June*, 1847, *Epitomised in Ranking's Abstract.*)

"In this epidemic [scurvy following the Irish famine] the initiatory symptoms were those indicative of general debility. The patient complained of weakness and listlessness, had a sallow countenance, and *pale and contracted* gums."—[Italics his own.]

Mr. Stiff, (*Med. Times, June*, 1847,) says:

'In old and edentulous subjects the gum symptoms do not make their appearance at all," And in subjects having teeth, "at first the margin of the gums is livid for one or two lines, even when the mouth and lips are anæmic, and this appearance resembles the lead symptoms."

Dr. Curran, (*Dublin Quarterly Journ., Aug.*, 1847,) noticed in his practice, that—

"A diseased state of the gums was one of the most constant symptoms, being *absent in four cases* only."—[Italics mine.]

Dr. Ritchie, of Glasgow, (*Edinburg Med. Journ., July and August* 1847,) noticed four varieties of scurvy:

"One variety was distinguished by anæmia emaciation, diarrhœa, bloody stools, and dropsy, while *the more distinctive symptoms of scorbutus were wanting.*" [Italics mine.]

And one of the distinctive symptoms here alluded to is tumefied gums, which every physician, almost, seems to think must be present, or the case is not scurvy. Most of the nursing sore mouth cases are of this or the following variety. (*See my paper in the New York Journ. of Med. for May last, on this subject.*)

"A second by anæmia; often by diarrhœa; rapidity of the pulse; epigastric pain or oppression; great general distress; an urticated crimson efflorescence on the skin; petechiæ and hemorrhages.

"A third by pains along the course of the nerves; simulating rheumatism.

"And lastly, the more ordinary form in which affected gums and legs were the prominent symptoms."

Now this last variety has been the one most commonly recognized as scurvy, in and out of the hospitals in these parts this season; but I have seen a number of cases of each of the preceding varieties. Cholera comes more properly under the second variety. Epidemic Cholera in children presents every symptom mentioned in this variety, viz., "anæmia, diarrhœa, rapid pulse, epigastric oppression, great general distress, an urticated crimson efflorescence on the skin, petechiæ and hemorrhages." How could the symptoms of the general run of cases of Cholera Infantum be better described? Nothing prominent is omitted but vomiting; and if the white blood hemorrhage takes place in the stomach, vomiting must and will occur; and then the case would be recognized by all as Cholera. I recognize epidemic Cholera, in both infants and adults, as coming clearly under Dr. Ritchie's second variety of scurvy, and refer my readers to his able paper, and others that appeared after the Irish famine.

The old authors bear testimony to the absence of the gum symptoms also. Lind, in conveying the sentiments of Eugalenus, who wrote nearly 300 years ago, says:

"And what is still more remarkable, the face of the disease was in a few years so much changed, that the putrid gums and swelled legs were no longer characteristic signs of it, as *it often killed the patient before these symptoms appeared;* [Italics mine]; and it is highly probable from the histories of

above two hundred cases of patients delivered in his book, wherein mention is made of the gums being affected in one person only, that such symptoms did now but rarely, if at all, occur." (*Lind on Scurvy, second edition, page 5.*)

And in this connection, with the old authorities before me, I proceed to redeem my promise, and to show by quotations from them that the Cholera flux has always characterized the scurvy more or less; that this watery flux of the belly is nothing new; is not a *new disease;* is nothing, in fact, but a symptom of scurvy, as I reasoned and wrote a twelvemonth ago, without then having referred to the old authors on the subject; is nothing, as I then said, but a serous hemorrhage into the alimentary canal, and what follows resultant phenomena; and everybody knows that hemorrhage of some sort is forever taking place in scurvy, is the pathognomonic sign of it; and why Dr. James Johnson did not mistrust the Cholera flux to be a scorbutic hemorrhage in 1833, when he wrote as follows, is matter of surprise now:

"Which diarrhœa is the first stage of a serous hemorrhage, and collapse the natural consequences of the loss of the serous part of the blood."

And again:

"The more we see of Cholera, the more we are convinced that the disease is a serous hemorrhage from the alimentary canal."—(*Medico-Chirurgical Review, Oct.*, 1833.)

But let us see what the old authors say.

Ecthius, who wrote in 1541, more than three hundred years ago, says that—

"During the course of this disease [scurvy,] some are apt to be very costive, while others have a continual *diarrhœa.*" Italics as I find them in all these quotations. (*Lind on Scurvy, second edition, page* 307.)

Eugalenus, who published in the beginning of the seventeenth century; whose work has been recommended by the greatest authorities, Boerhaave, Hoffman, and others; the standard author for nearly two hundred years; sets down as symptoms of scurvy:

"Vomitings, retchings, and even *the Cholera morbus.*" He says, "A vomiting is known to be scorbutic, 1st. By not yielding to the common medicines, and those prescribed by the ancients in this disorder; on the contrary, the patient becomes worse after using them: 2d, Its sudden, unaccountable remission, and equally unexpected return: 3d, Its seizing without any previous pain, disorder of the stomach, or distemper described by the ancients." (*Ibid, page* 329.) Just the kind of vomiting seen in epidemic Cholera.
"Convulsion, [that is cramp,] of a particular part."—(*Ibid, page* 331.)
"Copious sweats."—(*Ibid, page* 333.)

Cholera in every particular; and two hundred and fifty years ago these phenomena were emphatically and clearly diagnosed as symptoms of scurvy; not the most common symptoms of scurvy, by any means, but masking symptoms,

liable to mislead, and therefore this author points out the diagnostic marks of a *scorbutic* vomiting. And never was the suddenly-seizing vomiting of Asiatic Cholera without warning, and all right again after it, often seen, better or more graphically described.

Vander Mye, in his description of the scurvy as it appeared in the siege of Breda, 1627, says:

"The disease was seldom accompanied with a fever, but frequently with a dysentery, or other flux of the belly. * * There were frequent *retchings*, and recurring anxieties. Of those who were afflicted with the *diarrhœa* and dysentery, few escaped. * * * The discharges of the belly in this disease were indeed commonly watery and greasy, [rice water discharges,] but a flux did not relieve the malady. * * In a word, whether the disease was protracted to a longer or shorter period, most died from an internal fault in the *abdomen;* the flux proving rather a pathognomic sign of the scurvy than a critical and salutary discharge. [Hear!] It was before observed, the scurvy broke out about the equinox. At this time the dysentery and other fluxes of the belly were so trifling and uncommon, that we gave no attention to them, directing our whole care to remove the disease itself."

The account states that about two months later, say last of May, or first of June:

"Sordid fluxes of the belly, dropsies, and every species of distress, '*omne chaos morborum*,' afflict them, a great mortality proceeding this way. The physicians, at this time, giving up entirely with the cure of the disease, direct their whole art to remove the flux, and alleviate the more pressing symptoms."—(*Ibid, page* 344-47.)

Here was epidemic Cholera breaking out atop of scurvy under solstitial influences, according to this author; or the choleric passion was the wholesale finishing stroke of scurvy, to the beseiged city of Breda. Have I need to go further to prove the identity of Cholera and scurvy? Is it true, as some assert, that I have adopted a theory, and bend and distort facts to sustain it? No, I could go on and quote from a dozen authors similar proofs, all straight and parallel with my views. Lind, Drawitzs, Timæus, Willis, Moellenbroeck, Charleton, Pitcairn, Boerhaave, Nitzsch, Ellis, and others, all speak of some of the choleric phenomena as being symptoms of scurvy; that is, "vomiting and purging—convulsive contractions, [cramp]—stoppage of urine—suffocative asthma—coma somnolentium—illiac passion—atrophia—spots, exanthemata—fluxes with or without blood"—every symptom ever seen in any stage of the Cholera. These are their terms used, some giving one class of symptoms, and some another; it is not necessary for me to copy out their descriptions in full; the reader will find them in Lind on scurvy.

One says, "It might be a fit task for *Jove* himself to give an accurate account of the scurvy and all its symptoms;" and another makes it "a most universal disease, a calamity

common to all mankind;" while a third enumerates most of the diseases flesh is heir to, or rather *symptoms of disease*, from the illiac passion to the toothache, as proceeding from scurvy. If this be true, Dr. Rush was quite right in declaring disease a unit; and Broussais in locating its seat in the stomach; intelligible now; and Dr. Barnes may well say, this, that, and the other fever, ache, and ailment, are but epi-phenomena of scorbutus; but whether or not it be true of all forms of disease, (which I leave as I find it,) it is God's eternal truth as regards Cholera, if the testimony of all the old authors is reliable, and some of the moderns have not grown wiser.

Dr. Good, who wrote only about thirty years ago, says:

"The precursive symptoms of scurvy are lassitude, faintness, and pains in the limbs. * * * After this there are often shiverings, *nausea* and *vomiting*," (*Study of Medicine, vol.* 3, *page* 445) by which it is proved equally true according to reliable modern testimony, that vomiting is common in scurvy.

It is not necessary to pursue the matter farther; those who cannot see the identity of Cholera and scurvy from these quotations, and all the facts I have adduced to prove it, would not be likely to acknowledge it though their patients were to rise from the dead and assert it: they would still probably hold that Cholera is Cholera, and impute its cause to some hypothesis, some poison in the air, rather than to *defective alimentation*, in the rational way I have shown. If fungous gums and fixed genuflexions are the *only* manifestations of scurvy, my theory is fallacious; but if its gastric seat and constitutional vice are acknowledged, my theory stands; for by it every mystery that has enshrouded Cholera is cleared up.

I commend the subject to the consideration of the profession, and respectfully suggest to the medical press that it may not be a lost service to the interests of science and humanity, may not be unworthy of the time and space required to give, at least, a brief synopsis of my views, that readers at large may be advised there is such an explanation of Cholera out. Pronouncing it "simply absurd," as—no matter who has done, does not make it so. The opinion of that cloistered journalist is of no great consequence, perhaps, on a question in practical medicine; but still no one who caters for the medical public in this day, can faithfully discharge his duty as an editor by snubbing investigations into the nature of Cholera, or any other fell scourge. If he can show the fallacy of my theory by the substitution of a more rational one, well and good: if any one in the profession can, let him set about it. The sooner he performs the task,

the better. There is no higher problem for solution. Truth is all I am in search of—the cause of science and humanity my honest and sincere end and aim; and there is but *one* true explanation of Cholera. The endorsement of my views by some of the best minds in the profession is encouraging. What other theory of Cholera ever gained a professional proselyte? Not one. I am told, by here and there a member of the profession, that outside of my views there is no light; and that I can well afford to wait the developments of time in the settlement of the question in the mind of the age. True, but science and humanity cannot—the honor of American medicine cannot—the thousands annually falling victims ought not to be debarred the knowledge of a rational prophylaxis. The matter, then, is too important to be cast off with a shrug, and an ugh! or laid on the table with a look of supercilious wisdom; or "damned with faint praise." The question whether or not I have made a discovery, have contributed a positive addition to the sum of human knowledge, must be met. In what way or manner the profession may see fit to settle the question is not for me to say. I respectfully asked the appointment of a commission by the American Medical Association, at their meeting in May last, but the reference was refused, the subject (in the hurry of business I must charitably believe) not being deemed of sufficient importance! So I sent the essay, with the like request, to each of the five chief governments of Europe, and am not without indications that the subject may engage the attention of commissions abroad. No matter where, so the subject comes before a competent commission. In the meantime, I shall continue my researches, and most respectfully invite those physicians into whose hands this pamphlet may fall, and who may think favorably enough of my theory to try it in practice, to address to me the results of their observations.

I ought, perhaps, before I close this Appendix, to say a word on the question mooted in the conclusion of the body of the essay, "Why scurvy is thus modified," and which I said would be a subject for future reflection. I think I have now shown that the choleric phenomena have always been symptoms of scurvy, or for the last three hundred years, at all events. I have shown too that the symptoms of scurvy have been inconstant throughout this long period; sometimes the gum and leg symptoms being pathognomonic of it, and sometimes the watery fluxes of the belly—vomiting and purging. I have shown too, by modern observers, living witnesses, Dr. Ritchie, of Glasgow, and others, that the gum and leg symptoms are often wanting in these days.

Eugalenus explained this, "it often killed the patient before these symptoms appeared," and he puts down in italics, "*the Cholera morbus*" as a manifestation of scurvy; tells us how a vomiting may be known to be scorbutic, describing the kind or mode of vomiting peculiar to epidemic Cholera accurately; and Vander Mye, the Dutchman, describes an epidemic manifestation of scurvy, characterized by vomiting and purging scorbutic fluids, "pathognomonic of scurvy" —fluids exactly resembling rice water Cholera discharges; developed under summer heat in the besieged city of Breda—a *fac simile* of an epidemic of Asiatic Cholera, out and out:

"The States of Holland had taken care to provide this city for a siege with rye, cheese, and dried fish, [Cholera provisions]. The cheese and fish had, at times, been changed, but their stock of rye not for thirty years. [Hear, hear!] Thence it was become quite spoiled and musty."—(*Lind on Scurvy, second edition, page* 241.)

The city was held in a state of famine ten months by the siege, and when summer heat came on, the scurvy having been epidemic two or three months, the scorbutic watery flux, *alias* Cholera, broke out, and eclipsed all other top symptoms, proving so mortal, that the doomed city was forced to capitulate about midsummer. It appears to me that after this exposition, there is not much modification of scurvy to be explained, as it appears now-a-days in Cholera. It was pretty much the same thing in Dutch then that it now is in English; and until it can be shown that some other remedies are more efficacious than the anti-scorbutics I have recommended, viz., lemon juice, brandy, morphine, quinine, soda powders, etc., I respectfully commend the administration of them to practitioners—acids, tonics, astringents, opiates, and stimulants, are the rational remedies, followed up quickly with wholesome nutrition. Until, then, my theory is disproved, and shown to be fallacious by the substitution of a more rational one (a moral impossibility I trow,) It must stand as the true explanation of Cholera, to the great joy of the profession, and all mankind.

ADDENDA.

Extract from Bisset's Treatise on Scurvy.—"The companies of ships of war," says Bisset, "in their passage to *Jamaica*, being advanced near the tropic, the solid fibres chiefly at the surface of the body suffer an extraordinary expansion, and consequent relaxation; and the fluids are rarified: an effect being produced similar to that of the dry bath, by the sudden increment of the solar heat. As they advance more southerly a propensity to sweating increases; the veins, however, at length begin to subside, the circulation slackens, the complexion fades, the appetite is a little impaired, the strength and

sweating diminish, and the first symptoms of scurvy appear. As they advance further in their passage the symptoms are aggravated, tho sweat becomes viscid and scanty, and can be forced now only by hard labor, or the heat of the *orlope* air; and when these causes cease, is quickly dried up. About this time some continued and remitting fevers often appear. These are fatal only as commonly terminating in the most swift and fatal species of the scurvy. If a ship makes a quick summer passage to *Jamaica*, the crew will not be liable to the disease; yet, if ordered out upon a long cruize before *November* following, the scurvy will probably appear, especially if they are invaded by the bilious fever. After *October* it will seldom appear epidemical, especially if they arrived soon after the vernal equinox; for the scurvy seldom appears in the *West Indies* in the winter. Negroes, Creoles and seasoned Europeans are not obnoxious to the bilious fever, and seldom to the scurvy. * * * * * * * * * * * *

"The fifth species, the most malignant and fatal, is commonly preceded by a continued or remitting fever, and sometimes the second and third species degenerate into it, especially if supervened by any degree or species of fever. It is attended sometimes with a slow, continued, remitting or irregular intermitting fever and drought. Its progress is swift. It is sometimes formed by a complication of the scurvy, with the cachexy from an intermittent; and it is generally this species which succeeds fevers at sea. Two cases occurred wherein the *diuresis* was much impaired, with thick, turbid urine, and sometimes a spurious *ischuria;* in both, the disease quickly increased with profuse hemorrhages at times from the nose. Such hemorrhages, however, do not often occur, a cough scarce ever, nor any considerable *dyspnœa* in the scurvies in the *West Indies:* nor did the author ever see one case of luxuriant spongy flesh arising from the gums.

"Persons under a manifest scurvy are not invaded with the bilious fever; yet this fever often attacks them when highly predisposed to the scurvy, as also when recovering from it, in both cases proving very fatal."—*(Lind p.* 450.)

Extract from Dr. Cook's Letter. "When I came home to this country," says Dr. Cook, "I found the denomination of *nervous disorders* universally applied to most chronic and cachectic ailments. Upon examining those complaints in the lower sort of people, who live entirely on the farines and a gross diet, I observed they had a universal lasssitude, pains which they termed *rheumatic* flying through their body, and a breathlessness upon using exercise. The legs were sometimes swelled, and the *abdomen* almost always tense and tumified. But whether they had swelling or not, they had generally an ill-colored scorbutic complexion, and were listless and inactive to a great degree, with complaints of pains in their jaws, teeth, etc. I made no scruple to pronounce such cases scorbutic; and by proper anti-scorbutic regimen, medicines, diet, and exercise, seldom failed to give very sensible relief. I have disobliged many patients by saying they had the scurvy; a disease as hateful as it is unknown in this part of the world; but the relief they obtained from anti-scorbutics soon convinced both them and myself that their cases were not mistaken."—*Account of the Scurvy in Russia Ibid p.* 281.)

ESSAY

ON

CHOLERA INFANTUM.

BY M. L. KNAPP, M. D.

Entered according to the Act of Congress, in the year 1854, by
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ESSAY

ON

CHOLERA INFANTUM.

Dissenting from the views of writers in general, who consider Cholera Infantum a form of disease *sui generis*, and especially from those American authors, who treat of it as a disease peculiar to this country; I hold, that Cholera Infantum differs in nothing that is essential in its nature, or pathognomonic in its character, from the Asiatic or Epidemic Cholera of adults; or in other words, that the hitherto supposed two forms of disease are one and the same, produced by the same cause or causes, the phenomena differing somewhat on account of age; and I furthermore hold, that the disease is essentially a scorbutic affection. Entertaining these views or opinions, I proceed to offer the reasons for holding them, and to set forth the principal data on which my conclusions are based.

EVIDENCES DERIVED FROM ITS HISTORY.

The tender organization of the infantile system, under the usual efforts of nature to remove irritation, obstruction, and all forms of disease, manifests phenomena differing more or less from the symptoms or efforts of nature observed in adults laboring under the same diseases. There is no truth in practical medicine better understood and established than this, and none that deservedly holds a more controlling influence over the practitioner in diagnosing the diseases of children, or in the adaptation of therapeutics to infants. Making application, then, of this truth or first principle to

the proposition above advanced, that Epidemic Cholera and Cholera Infantum are essentially the same disease, the differences in the course and symptoms of infant and adult Cholera are rationally explained on sound and well-established principles of medical philosophy. The great similarity in the phenomena of the supposed two diseases has not escaped the observation of the profession, and has been more or less spoken of by authors in treating of Cholera Infantum, but as this malady has been prevalent in the cities of the United States every summer, probably, since the days of Rush, and long before, even since the earliest records of our cities, and the Asiatic Cholera of adults never supposed to exist as an epidemic here till it made its appearance in the summer of 1832, it is not surprising that sporadic or endemic cholera-morbus should be held to be the prototype of Cholera Infantum, and the stranger or new comer, the Asiatic Cholera, a new disease, or at least, a new variety of Cholera.

In Europe, Cholera Infantum is comparatively but little known, at least by this appellation, and, probably, no similar form of disease rages among infants there, of the same severity, regularly becoming epidemic every summer; and for the reason that the winters are warmer and the summers cooler than in the United States, meteoric influences, or extreme thermometrical impressions, from the swing of the seasons, being the great exciting causes, after a faulty alimentation or assimilation has remotely inlaid and accumulated the scorbutic diathesis or depravity in the system.

This disease, however, is by no means unknown in Europe, and, probably, in no part of the world. It is treated of as *Choleric Fever of Infants* by Copland; as *Follicular Enteritis* by Billard; and as *Enteritis of Children*, including inflammation, softening, diarrhœa, etc., by some other French writers. Cruveilheir has described it under the name of *Maladie gastro-intestinale des Enfans avec desorganization gelatineforme*—the mucous membrane reduced to a spongy pulp, quite characteristic of scorbutus. This accords with the German and Prussian view of the nature of the disease, in which countries it is denominated *Gastro*

malacia. The *Dublin Treatise*, by Evanson and Maunsel, denominates it a *species of Cholera*, and says it is often met with in Ireland in the autumnal months. According to Dunglisson's experience, "it is not an uncommon disease in London, and strikingly resembles the affection vulgarly called '*Watery Gripes*,' in England."

If my view of its nature be correct, its greater prevalence in some countries than in others is rationally accounted for on climatic principles; those countries suffering least, ceteris paribus, that enjoy the most equable climate, which is conformable to the known laws of scurvy. This view also explains the nature of the anatomical lesions, and also the discrepant views of authors as to the inflammatory or non-inflammatory character of the disease—the softened, congested, ecchymosed and ulcerated states of the mucous structures. The swollen condition of the gums, so much spoken of, and for which lancing is so generally inculcated, is often but the hyperæmia and commencing tumefaction that precedes sponginess, so characteristic of scurvy. The same tendency to softening, sponginess, hyperæmia and congestion, extending through the primæ viæ, explains all the phenomena—the varied symptoms and anatomical characters. The disease being a lesion of nutrition, the structures immediately concerned in digestion and assimilation first give way. According to Horner, "the morbid derangements of the vascular and follicular structure of the mucous membrane, endowed with vital actions the most important to life, constitute the essential character of Cholera Infantum;" and these tissues first give way and puff up in scurvy, or, at all events, are the seat of the disease when *diarrhœa* characterizes it.*

Dr. Copland's definition of *Choleric Fever*—Cholera Infantum of Rush—is, 'vomiting and purging, with fever generally of the remittent type, [which is commonly the scorbutic type,] irregular spasmodic convulsions, and rapid

* "When the inert vapid serum is accumulated in the tunica cellulosa," says Nitzsch, see Lind on Scurvy, 2d ed. p. 421,) "an anasarca is induced; when within the substance of the lungs, an asthma, upon which a true hydrops pectoris ensues; when in the lower belly, an ascites per infiltrationem; and when in the glands of the guts, a diarrhœa."

emaciation, attacking infants and children," which definition, save in the age of the subjects, will answer with technical accuracy for Cholera Adultorum, to make use of the legitimate correlative term, for convenient contradistinction. The same author says, that "the subjects of Choleric Fever are infants of two or three weeks to several years of age, and that *after this period, the causes that produce it occasion Epidemic Cholera.*" This latter assertion which I have put in italics, though doubtless true, differs from all American writers consulted, who fail to light up the dark, unfathomed abyss of the essential nature, pathology and true cause of the disease, by assuming it to be the infantile mode of manifestation of Cholera morbus, an irritation believed to arise from a surfeit, or offending ingesta, especially the indulgence in acescent vegetables and fruits; and this apparently accidental stumbling upon the truth by Dr. Copland, is inconsistent with his own view, that Epidemic Cholera is propagated by contagion—no writer whatever, so far as I have consulted authorities, has supposed Cholera Infantum to originate from or to be propagated by contagion. The limit, "several years of age," set, at which Cholera Infantum retires, and Cholera Adultorum takes the field, is so palpably an arbitrary, forced, indefinite and unnatural limitation, and so useless and senseless if the cause producing both the infantile form in subjects over several years of age, and the adult form be the same, that it is a forcible commentary on the evil influence of nosology: still there is a great truth herein shadowed forth and maintained, viz., *the unity of causation of Cholera and Cholera Infantum*, which makes the supposed two diseases one in fact, *essentially the same*, differing in nothing, save as the symptoms are modified by the ages of the subjects—just what I hold.

Most of the American writers who treat of this scourge, not only maintain that it is peculiar to infants and children under five years of age, but some hold that it is peculiar to this country, and not known in Europe; and all hold to the stereotyped dogma, that it seldom occurs before the third month of infantile life, or after the fifth year. Dewees, if I remember correctly, cites an extraodinary instance, how-

ever, a case that occurred in a lad of eighteen years of age; and I can truly say that I have attended cases of well marked Cholera Infantum not only in children over five years of age, but over ten, twelve, or even eighteen; aye, I have treated repeatedly *mother and infant* laboring under it, and this too during the seasons when Cholera Adultorum was not epidemic: the same remittent, scorbutic type of fever; the same character of discharges, both by vomiting and purging, especially the unmistakably characteristic, greenish, fœtid, watery stools; the same dry, wilted, withered, palid skin; the same attenuated, softened condition of the system, under a chronic holding on, or struggle of time, that is so characteristic of the affection often; in fine, the same disease as certainly as ague and fever occurring in mother and infant is the same, though the infant never shake under the rigor, and the mother nearly shake her teeth out.

All authors agree, however, that infants between six months and two years old, are, by far, most liable to be attacked; that is, during the period of primary dentition: and another fact in its history appears also to be well established, viz., that more deaths occur from it in infants under one year old than during the second year of age. From six to twelve months old, then, is the special age at which infants are carried off by this "*summer complaint*," which comprises those infants that have been subjected to the influences of one winter; enough, conjoined with the powerfully exciting influence of succeeding solstitial heat, to answer to the scorbutic law — an inlaying of disease during winter and spring from the absence of sufficient succulent vegetable food, to outbreak from any exciting causes whatever, but especially hot weather.

Besides, it is to be borne in mind that the weakly, the scrofulous, the offspring of poorly-fed, sickly parents, the early-ophaned, and bottle-fed infants, are the picked subjects—those deprived of the proper elements of nutrition, and those whose organs of digestion and assimilation could hardly manage or appropriate them if present. Now, as darkness results from the withdrawal of light, or cold from the abduction of heat, so scorbutus follows as a natural re-

sult of the withholding of the proper elements of nutrition, or an inability in the system to appropriate them.* Its latent accumulation in the kind of subjects, and under the circumstances spoken of, is as morally certain as that the sum of two and two is four, or that twilight and darkness follow sun-set; and it is only necessary to study the laws and history of scorbutus, to learn its terrific and collapsing tendencies, where, indeed, no evil was suspected; its Protean shapes of horror and woe, and its thousand and one shades and degrees of manifestation.

Fearing I am not yet fully understood, or that I have not sufficiently explained how this law operates in regard to infants, how scorbutus happens to be so especially inlaid in infants of from six to twelve months old, by the influence of *one* winter, I will explain the matter more fully now, least I pass it obscurely over.

It is a law in physiology, that the quality of a nurse's milk is good or bad according to her state of good or bad health, and the sufficiency and quality of her daily ingesta. The secretions answer to the ingesta in fifteen minutes, so physiologists say; and the nursing of an infant by a mother just after indulging an intense fit of anger, has, in fifteen minutes thrown the infant into convulsions, if I remember my rudiments correctly. Now it is the natural law that infants shall be nourished exclusively from the breasts of their mothers for the first six months, and few have cut their molar teeth, Nature's sure testimony of the infant's ability to dispense with the breast, before twelve or fifteen months of age. It follows, then, that the great majority of those dying of Cholera Infantum, if scorbutic, are rendered so from the bad quality of their mothers' breast-milk. Say, to average the matter, that nine months old is the fatal epoch with infants making their exit from life by Cholera Infantum, and

* Lind states, that in several orders of different religions, those who are obliged by way of penance to abstain a considerable time from food, perceive their breath become fœtid, their teeth loose, their gums spongy and soft. The same symptoms are also observed in those who are starved to death; and these are the recognized and acknowledged commencing symptoms of scorbutus the world over.

that this occurs in July, the hottest month of summer: all of which is historically true, as shown by the tables. The whole class, then, thus averaged, must have been born in October, and were six months old in April, just the season when there is least succulent vegetable food to be had, and what remains is decayed, frosted, deteriorated in quality, and the more carefully preserved stores exorbitantly high in price, so that all poor families in the cities are obliged to do without succulent vegetables for many weeks, and to live on pork, peas, beans and coarse bread. Ten to one, through February, March, April and May, those families from which infants are snatched in July, are nearly destitute of succulent vegetable food; and milk, butter, poultry and *fresh meats* are then, also, very dear. To say nothing, then, of the co-operating influences of cold, insufficient clothing, damp, basement habitations, filth, foul air, etc. the nursing mothers' ingesta do not contain the necessary elements of nutrition, for maintaining their own health and supplying the proper elements of a wholesome nutrition through their milk to their infants. The soluble salts of iron for the blood, potash for the muscles, lime for the bones, etc., etc., the infants so especially require at this period of rapid growth, and which are elaborated *only* in vegetables and fruits, being left out of the mothers' dietary, they become scorbutic of course; their milk begins to fail in quantity when it should increase; and to become impoverished in quality when its elements should be richer; and thus emerging from the influences of one winter, the infants of such mothers are forced to subsist thence till the Ides of July, on stinted allowances of scorbutic milk, interlarded with innutritious arrow-root and other feculas, and crude aliments craved, such as fat pork and baked beans, the dietary of the family board. The natural consequence is, they begin to sicken and fall, as hot, debilitating weather comes on. All the early summer fruits, acids and vegetables are scrupulously interdicted, until their natural pantomime longings and cravings are such, that they are often to be seen gloating over a bad specimen of a June apple that accident or good luck may have cast in their way upon the floor; and they

would fain try their young inscisors on an unripe damson plum, or even a persimmon.

The views I have adopted, then, of the nature of Cholera Infantum, are not irrational, and keeping them in mind, the history of this scourge of tender years, may, in many cases, be traced to the fœtal state; and I doubt not thousands and tens of thousands of infants are born with the taint of the disease in their blood; aye, that the very germs of future infantile forms in ovario, are imbued with it, and also, the sperm which alone can wake a vivifying influence upon them. This is tracing its history farther back to be sure, than any writer hitherto may have done, but doubtless not beyond its legitimate remote origin, often, for I will show it to be hereditary. The ante-natal chapter in the history of Cholera Infantum, whether chronicled or not in medical books, is plainly inscribed on the tablets of infantile mortality, still-born and otherwise, that annually swell the death-waves in the entreports of the United States, into which cities thousands upon thousands of scorbutic emigrants are annually thrust, and who there beget numerous pestilence-stricken offspring, to perish of Cholera Infantum, under slight exciting causes; and where, also, multitudes of destitute, mongrel, squalid, native families are doing the same; crowded together in damp cellars and filthy tenements, living from hand to mouth on a crust and bacon-rind, alike deprived of the aliments from which healthy blood is produced, and a wholesome atmosphere by which alone it can be renovated.

Admitting my views to be correct, viz: that Cholera Infantum is the most common form in which scurvy manifests itself in infants, an explanation is thus afforded as to the silence of the older authors on Cholera Infantum, and of the modern authors on infantile scurvy. No modern author that I am aware of treats of scurvy as among the common diseases to which infants are subject, while Albertus declares that it is *most usual in children*, and is either a hereditary scurvy, or that which is got from the nurse. To be sure, Dr. Good asserts, that infants whose mothers are affected with scurvy participate in the disease, from the milk not

being sufficiently nutritious, but no author delineates the course and symptoms of the disease in infants, whom I have consulted, and to deduce the phenomena from the meagre descriptions of scurvy to be found in standard systems of practice, is a task not likely to be fulfilled by readers. Whilst the older authors then, as well as modern, are quite inexplicit as regards the symptoms of infantile scurvy, and yet leave no room to doubt, aye expressly assert its very common occurrence, most usual in children, says Albertus, and innutritious milk causing it in infants, according to Dr. Good, my views derive great support from the ancient-modern and more recent authorities. They harmonize wholly, for no disease of infants is more common than Cholera Infantum, and the picked subjects, as before asserted, are those poorly supported on innutritious milk. My views of its *ante-natal origin* too, are sustained by the old authors on scurvy. Pontopidan says of married persons who live together many years, the healthy is not infected though the other party has scurvy; but if they have children *they* sometimes take the infection, though not always. Sennertus asserts that the scurvy occasions a stoppage of the courses in women; in place of which they have a white, acrid, saltish running, apt to infect men; and that men from this disease are rendered unfit for generation, by having a watery, vitiated semen; and Reusnerus declares that scorbutical women are subject to the fluor albus and menses discolores. The Faculty of Physic at Copenhagen, say the scurvy is hereditary and infectious, and that a hereditary scurvy is seldom cured. Timæus says, he generally succeeded in the cure unless the scurvy was hereditary or very deeply rooted; and Hildanus publishes a letter from Ludov. Schmidt, giving an account of the Prince of Baden's youngest son, a child of fourteen months old, afflicted with the scurvy, who was cured with anti-scorbutics. All these facts bear very forcibly on the question of the identity of Cholera Infantum and infantile scurvy, and the reader, of course, will keep them in mind as he follows me in these researches. From the multitude of facts I will adduce, I doubt not every candid reader will come to the conclusions at which I have arrived on this subject, novel and strange as my views may seem at first thought.

The mortality in the city of New York, from Cholera Infantum during the last fifty years, according to the Semi-centennial Report of the City Inspector, numbers 14,968 souls: an average of almost 300 a year. The highest mortality in any given year was 926, which occurred in 1849, the year of the greatest mortality from Cholera Adultorum; and the lowest mortality in any year occurred in 1816, when only *one* death from this cause appears on the face of the Report. That summer, according to my remembrance, was a very cool one: the previous winter, I infer, must have been a mild one, and the previous summer a highly fruitful and productive one. The latter inferences, however, I have no means of verifying, for want of agricultural statistics, and meteorological tables.

It is said that in the sea-ports of the United States, further to the south, the mortality from this scourge is even greater in proportion to the population than in New York.

The mortality from the disease in Philadelphia, during a period of fifteen years, from 1825 to 1839, inclusive, was 3,576, according to Dr. Condie; an average of 238 per annum.

In Baltimore, during the year 1853, Cholera Adultorum not epidemic, the mortality from Cholera Infantum was 256; while in 1854, adult Cholera being sub-epidemic in most of the cities of the United States, it was 495.

In Boston, the disease is said to be comparatively much milder and less mortal, doubtless because there is much less poverty and destitution there.

In New Orleans, St. Louis, Cincinnati, Chicago, and Buffalo, the ravages of the disease are great; and the mortality appears to be the greatest, uniformly, in the cities most largely peopled with immigrants.

All writers agree that this destructive pestilence is mostly confined to the hot season of the year, creeping into activity as the spring and summer heat comes on, and declining as it goes off in autumn.* In its epidemic manifestations,

* It appears by the monthly reports of the Board of Health, of the city of New York, for the year 1853, that the deaths from Cholera Infantum during each month of the year were as follows—viz., January 2; February 2; March 2; April 2; May 10; June 117; July 308; August 316; September 115; October 37; November 5; December 6.

therefore, it conforms to the general laws that govern Cholera Adultorum, and also scorbutus.* Another remarkable feature in its history is, that it prevails epidemically in the *cities* and not in the *country*, conforming again to the law of its great prototype, and also to the law of scorbutus. Much speculation has been offered as to its etiology from the uniformity of these laws. That high summer heat and unwholesome habitation in the confined, foul air of the cities, are, in some way, concerned in its production is evident, and admitted by all writers, but in what way or manner none have clearly explained. The same degree of heat does not affect country children in the same way, and I venture to affirm would not under an equal deterioration of the air; and for the reason that country people have usually an abundance of succulent vegetable food, fruits, and good fresh cows' milk, and an epidemic scorbutic diathesis is impossible under such a dietary. Now and then a sporadic case occurs, to be sure, in the country, particularly in the so-called malarious districts, where the assimilating functions are impaired, and it is thought, by some writers in the United States, to be a malarious fever, the force of which is turned inwards upon the bowels; so strangely is the human mind prone to hypothesis. One circumstance of importance in its history should be noticed here. The prevalence of the disease is not always in the ratio of the intensity of the summer heat, the great exciting cause, proving my view—proving that it is caused rather by defective diet. The Philadelphia statistics of Dr. Emerson, arranged in tabular form by Dr. J. Forsyth Meigs, (*Diseases of Children, p.* 290,) settle the matter conclusively, that the disease is not developed in the ratio of the intensity of summer heat. This table shows that in 1815, the mean temperature of the three summer months being 76 ° F.,

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* Dr. Cook, who has taken particular note of the epidemic manifestation of scorbutus as it appeared in successive years in Russia and Tartary, says that it generally breaks out in the latter end of February; that it is often complicated with agues, dropsies, phthisis, etc.; that the violence of the epidemic seldom continues after the middle of July, *except in complicated cases;* that from August to October agues raged with more violence than ever; that *fluxes* then succeeded, and universal sore throats *among children* followed.

only 92 deaths occurred from Cholera Infantum, while in 1814, the mean temperature being but 70 ° F., there were 125 deaths. And again it is matter of fact, that in 1825, the hottest summer known in the United States, the mortality from Cholera Infantum in the city of New York was less by over one-third than it was the following summer, 1826; and this season, though a trifle less hot only, still revealed a less mortality again from Cholera Infantum than the summer of 1827, which was much cooler than either; one of medium temperature only. The laws of causation of the disease, then, cannot be explained by heat alone, nor by heat and foul air united, though the combined influence of these depressing agents, as modified in cities, is held by all writers to produce it; poor diet, and especially free indulgence in fruits, co-operating; all of which, though containing some truth in the abstract, still, as hitherto explained, reveals nothing as to the nature and pathology of the disease, or the indications to be fulfilled in the treatment. The view I maintain, that a faulty alimentation either in the parents or child, impoverishes the blood as the *remote cause*, inlaying a greater or less degree of the scorbutic diathesis, to be developed by heat, foul air, errors in diet, and other exciting causes, makes this hitherto obscure matter clear, and indicates the proper remedial course to pursue—the rational treatment by acids, fruits, and a highly nutritious dietary.

EXTRAORDINARY SEASONS—PESTILENTIAL YEARS.

It appears, then from what seems to me to be a rational interpretation of Nature's laws, in the matter, that this "*summer complaint*" of infants, as it is popularly called, is greatly the result of *wintry* influences, or those causes that destroy, blight or abridge the vital stimulus of succulent vegetable food, rather than the offspring of an abstract, hypothetical malaria, or summer-concocted compound of heat, trespass in fruit eating, and the foul air breathed in crowded lanes and alleys of cities; as I proceed to show more clearly by the constitution of the seasons of certain remarkable years, and the statistics of the mortality from Cholera Infantum during those years.

The winter of 1831–32 (to begin with the calendar of years most remarkable in the category) was one of extreme rigor. The previous winter also, had been one of the same constitution, characterized by deep snows and long and severe cold weather, though not so universally inclement all over the United States as the winter of 1831–32. The Mississippi River was frozen over during that winter, however, 130 miles below the mouth of the Ohio, a circumstance before unknown since the settlement of the western States; but the winter of 1831–32 surpassed it greatly, the mercury in the thermometer sinking to 20 degrees below zero on several occasions in the Mississippi valley, north of 40 degrees of north latitude, and in the northern States of the Union and Canada to near the degree of congelation. In the New England States, according to Dr. Holyoke's Journal, the mean temperature of the winter was colder by three degrees than the coldest winter that had occurred from 1786 to 1828, a period of 42 years. The intermediate summer of 1831, between these two cold winters, was characterized by excessive heat and floods. The quantity of rain that fell was nearly double the amount that fell in the summer of 1832, and more than double the quantity that fell in either of three preceding summers of 1828, 1829 or 1830. "In consequence of this abundance of rain, various kinds of produce suffered greatly, Wheat vegetated in the field, in some instances before it was cut, and in many cases afterwards." In the spring of 1832, excessive floods again occurred, from the melting of the snows, which had fallen in the middle States to four feet in depth. The rivers were swollen to a greater height by some five or six feet than in any flood since the most remarkable one chronicled in the history of the United States, viz., that of 1784.—(*American Almanac*, 1834, *p.* 83.)

Thus, to the frosting of the family vegetable stores by the intense frosts of two winters in succession, were added clustering causes of blight during those remarkable years, viz: a summer of scorching heat, floods and inundations with immense agricultural losses, and the ruination of crops—precursors of epidemics the world over, and particularly epidemics of the scorbutic or petechial type; and in illustra-

tion, the records show that the deaths from Cholera Infantum in New York in the cool, pleasant, dry, very fruitful and constitutionally *per se* salubrious summer of 1832, following that chapter of "moving accidents by flood and field," amounted to 334; while in the very hot, damp, preceding summer, there were only 172, and in the summer following after that fruitful year and abundant vegetation, the summer of 1833, only 129!

Never before, it appears, had the mortality in New York from this disease, in any one year, amounted to over 172, the record for 1831, since the years 1804 and 1805 (the constitution of the seasons of which I have no scource of reference at hand for ascertaining) except in the years 1826 and 1827, when the mortality reached 222 in the former, and 238 in the latter. Now it is matter of history that the summer of 1825 was the hottest of which there is record in the United States; and the succeeding summer of 1826, was within a fraction of the same mean temperature, both being above 83 ° F. Philadelphia observation—two successive seasons of short crops from prolonged heat and drought, unquestionably, for seasons of this scorching character always abridge the latter harvests; and to follow up the causes of the pestilence, so prevalent in all the cities during the thermometric succession of those remarkable years, the winter of 1826–27, was one of nearly the coldest character, the mean temperature of January being down to 26 ° 60 ′ F. at Philadelphia; only some three degrees less rigorous than the coldest month, December, in the winter of 1831–32, which was of the mean temperature of 23 ° 35 ′ F. It is well, for comparison, to post up the mortality immediately before and after those fatal years: thus in the hottest summer on record in the United States, 1825, the deaths from Cholera Infantum in New York were only 151, and in 1828 only 167, to contrast with 222 in 1826, and 238 in 1827, as before stated. Some other baneful influence, therefore, besides summer heat, the foul air of cities, and concurrent indiscretions in the use of fruits, must be conceded to have been operative in the causation of the epidemics of Cholera Infantum in 1826 and 1827.

Again, the winter of 1833–34 was characterized by exceedingly rigorous weather; the mean temperature, 29° F., of the month of January, 1834, was one degree below the mean temperature of January, 1832, but the balance of the winter, except the early part of February, was rather mild. It does not appear to be a law, according to the statistics, that prolonged, rather low winter temperature, giving a low mean for the whole winter, is so mischievous or detrimental to the public health, as extremely sharp, cold spells of mercury-freezing weather and untimely frosts in the spring, the former of which reach the cellars, store-houses, and depositories of laid-up succulent food, while the latter nip in the bud, or blast before maturity, the growing crops; which will serve to explain, on rational principles, the extraordinary force of epidemic Cholera Infantum, presently to be noted by statistics, in 1834, and also in other years, the precise constitution of the seasons of which may be forgotten. Added to the extremely sharp, cold weather in January and February, 1834, sufficiently intense to close the Mississippi with ice *twice*, to the mouth of the Ohio, there occurred *a general blight in vegetation* in the month of May of that year, destroying to an unheard-of extent the fruits and garden vegetables of the season; and the summer of 1834 was characterized by a temperature considerably above the average mean—it was a hot summer—it closed hot and dry after early and midsummer deluging rains. The mortality from Cholera Infantum in New York in 1834 was 475 to contrast with 129 (more than treble) that of the previous year, and 231 (more than double) that of the year following!

The winter of 1837–38 was the climax of a series of cold winters; and the summer of 1838 was characterized by excessive heat and drought. A vast amount of general sickness in all parts of the United States marked those years, especially the malarious, typhus and exanthematous fevers, and whooping cough. The scurvy broke out in its old-fashioned or recognized form in some ports and prisons—the *nursing sore mouth*, so called, (land scurvy not recognized,) prevailed sporadically, and even sub-epidemically in pregnant and nursing women, in various localities of the United

States, particularly in the new settlements, where horticulture and fruit-growing had made but little progress—many of the infants of mothers so affected inherited or imbibed it, and died of *Cholera Infantum*, (land scurvy in infants,) in the rural districts of the newly-settled States, where the writer has seen it prevail epidemically, notwithstanding it is thought generally to be confined to the cities. And in proof of the country prevalence of Cholera Infantum in new settlements, I quote from *Gallup on Epidemics*, *p.* 75, whose historical sketch of the prevailing diseases in the newly-settled State of Vermont, from the peace of 1783 to 1815, is before me. Reviewing the great mortality of the year 1813, which, he says, "ushered in the most severe epidemic disease that ever afflicted the inhabitants of Vermont, the epidemic peripneumony," Dr. Gallup closes the summary of that year with the following remarks: "In the latter part of the summer and first winter months, a considerable number of cases of typhus fever occurred; also several cases of *Cholera Infantum*. This last disease has prevailed more or less almost every summer, although it has not been particularly noticed before now."

The winters of the years 1836, 1837 and 1838 were *locally* severe, so to express it, in different years, throughout the Union, but not so universally severe, sharp, or blighting in any one year in all parts of the United States as the winters of certain other years have been, nor were the years marked by the universally excessive snows, rains and floods, that characterized 1831 and 1832. The mean temperature of this series of cold winters was about as low, and in some instances even lower, than the winter of 1831–32; but I have not been able to reach any statistics of the weather that give a lower temperature during the whole series than 12 ° below zero, which occurred on the 17th of February, 1838; and the observations were made at Dartmouth College, New Hampshire, in one of the most northern States; in which latitude the mercury sank to near 40 ° below zero in 1831–32.

A similar constitution of the seasons prevailed in Great Britain in 1837 and 1838, it appears, for Dr. Budd, (*Tweedie's Practice, Article Scorbutus.*) in illustrating his views that

a scorbutic *taint* occurs *generally* in the poorer classes in cities after cold winters, speaks of "the extraordinary prevalence of typhus in the *severe winter* of 1837–38, and of the petechial character of that epidemic."

Upon the whole, then, in a review of the constitution of the seasons of this series of years, it does not appear that the pestilential influences resulting from the abridgement of vegetable food, by the severe frosts of winter destroying the laid-up stores, or untimely spring frosts blighting the crops and fruits, were sufficient for the production of a general epidemic of the choleric type among adults, as in 1832 and 1834; though, as before mentioned, there was a vast amount of other forms and types of disease, some cases of Cholera Adultorum, and Cholera Infantum was strongly epidemic. In glancing at the statistics of the mortality from Cholera Infantum in New York, during those years, a large increase is noticed for 1836, 1837 and 1838 and the maximum mortality occurred in the last year of the series, in the excessively hot and dry summer of 1838, after the climacteric cold winter of 1837–38. To post up, again, for comparison, the leger stands thus: in 1835, the deaths were 231; in 1836, 280; in 1837, 253; and in 1838, 437!

Not to dwell on minor illustrations, the years 1844, 1845 and 1846, presented another series, remarkable for their meteoric character, and ending in a mortal climax, again, in the year following, 1847.

The ball had begun to roll in the spring of 1843, which was exceedingly unfavorable for planting, being retarded by cold for nearly a month behind season. The winter of 1843–44 was characterized by a low mean temperature, 31 degrees, and by sudden and frequent vicissitudes. The winter of 1844–45 was not remarkably cold, but that of 1845–46 was very cold, the mean temperature being 30 degrees; the winter of 1846–47 was the mildest of the series, fortunately, or the climax of consequences would have been even more remarkable. But the springs and summers of those years were characterized either by excessive rains, floods, deluges and disasters to crops, or droughts and blights, to the great abridgement of production. The general constitution of the

seasons of those remarkable years is well remembered, and the extraordinary amount of general sickness, again, that prevailed in the United States, is too prominent a fact not to be remembered by those, even, who took less note of the meteoric phenomena. It is worthy of remark again, that a similar constitution of the seasons prevailed in Great Britain and Ireland, as the potato blight, Irish famine, and scurvy and Cholera of those years attest. Much was said in the public prints, of the potato blight in the United States; still those disastrous years, on this side of the Atlantic, were not so universally overwhelming in the pernicious impression of the abridgement of succulent food as to produce a general epidemic of the choleric type in adults, whose capability of endurance is much greater than that of infants. Had the last winter of the series, that of 1846–47, been remarkably sharp and cold, following the excessively hot and dry summer and autumn of 1846, doubtless Cholera Adultorum would have been epidemic in most of the cities of the United States, for the scorbutic diathesis was very prevalent in the bed-side observations of the writer: the Asiatic Cholera was sporadic, and Cholera Infantum was strongly epidemic. The mortality from this scourge in New York, in 1847, was 692, to contrast with 527 of the previous year, and 505 of the year following; or, more fully, in 1844 the deaths were 375; in 1845, 563; in 1846, 527; in 1847, 692; in 1848, 505.

Pursuing the calendars of evil years, that of 1849 was the next in order. The winter of 1848–49 was a very long, cold and snowy winter. In the latitude of 42° in the Mississippi valley, it set in with a snow-storm on the first week of November, and continued till the latter part of March. The mean temperature of the months of January and February was lower than that of the corresponding months of the memorable winter of 1832: the mean temperature of February was 26° 52′ within three degrees of the mean temperature of the coldest month, December, of the winter 1831–32 —New York observation, which is the case in all instances, unless otherwise expressed. It appears, compared with other years, to have been more severe in the northern and western portions of the Union, and to have increased in its remark-

able inclemency onward to the Pacific Ocean; for Colonel Fremont, of the United States Army, encountered snow forty feet deep in his perilous and fatal explorations of the South-Pass route over the Rocky Mountains to California, the men and mules of his party mostly freezing to death! and the St. Louis Republican of the 30th of March of that year says, "it learns from Captain Vanvleit, of the United States Army, direct from Fort Childs, on the Platte River, that the winter has been one of extraordinary severity, the snow deeper, and the cold more intense, than was ever known by the oldest (Indian) residents." (*Cincinnati Gazette, April*, 1849.) South of the snowy latitudes, say about the Fortieth parallel, vast quantities of rain fell, and the rivers kept high and full of running ice. Throughout the fall, winter and spring, the Ohio River and its tributaries were never, probably, so long continuously swollen by rains. In the southern States the earlier half of the winter was wet, hot and sultry, but in the latter half extremely sharp and cold. This gives the correct general character of the winter. The spring opened late in March with tremendous floods throughout the Mississippi valley; destruction of property, bridges, mills, canals, shipping. etc., especially in the north-western regions; and tornados, inundations, crevasses in the Mississippi, and ruination of plantations and crops in the more southern regions. But the *black frost* of the spring capt the climax of the fatal causes of the awful summer Cholera epidemic of that year; which blight occurred late in the month of April, and killed all the fruit, save a few stunted apples, to the south of about 41° of north latitude, and all the salads, greens, and early garden vegetables; yet no note has ever been taken of this by any writer except myself, in any researches or reports made upon the cause or nature of Cholera or Cholera Infantum! If the interdiction of fruits and vegetables in Cholera seasons, as held and enjoined by the profession, be right, their wholesale destruction by a general blight should prove a blessing; but in this review of years and of seasons, the relation of blight and Cholera seems to stand like that of cause and effect. It is well to support views of so innovating a character by authorities.

"On Friday evening last, the weather began to grow unusually cold. Saturday was quite cold, and on Sunday evening the thermometer had sunk to freezing point; and by Monday morning it was 7° below freezing point. It is believed that every species of fruit is killed."—(*Hamilton, O., Intelligencer, April* 19, 1849.)

A considerable fall of snow occurred, and in speaking of the snow-storm, the same newspaper notices a remarkable coincidence, that "exactly one year ago, April 18, 1848, a violent snow-storm visited the whole western country in our latitude."

"*The Weather—Fruit Destroyed.*—The sudden change from warm, spring weather to cold, winter weather, which took place on Sunday last, has destroyed nearly all the fruit in this vicinity, and in the adjacent parts of Ohio, Indiana and Kentucky. Every species of tree-fruit is taken, except late blooming apples. In addition to this, even grapes are so much damaged in this vicinity, as to leave but little hope of anything beyond the most meager vintage. Shoots from one to three inches long, with the fruit-bud well formed, which four or five days ago looked as luxuriant as we have ever seen them at this season of the year, now hang black and dry, and crumble to the touch.

"At Louisville, Ky., on Saturday night, the thermometer fell to 24°. In this city on Monday it stood at 26°, and on the hills west of the city was down to about 24°.

"The sky has been overcast most of the time since the change, a dry wind has prevailed, and we have had but little hoar frost."—(*Cincinnati Gazette, April* 19*th*, 1849.)

"*Telegraphed.*—Philadelphia, April 23, 1849—Advices from the south state that nearly the whole cotton and grain crops are destroyed by the frost."—(Daily Paper above cited, April 24, 1849.)

"*Cold Weather South.*—The Charlestown (Virginia) *Free Press* says, 'The late severe weather has destroyed all prospects of fruit for the present year, especially peaches.'

"The Wilmington (North Carolina) *Chronicle* says, 'We fear this storm has occasioned general destruction, in all this region, to the farm fruit and early vegetables.'

"In Charleston and Columbia, South Carolina, and Augusta and Savannah, (Georgia,) snow fell to the depth of several inches.—Editors regaled themselves with *snow and strawberries*."—(Paper above cited, April 25, 1849.)

"*Cold Weather South.*—The Anapolis (Maryland) *Republican* of Saturday last says that the peaches, apricots, cherries, figs, plums, etc., in that vicinity have all been destroyed by the frost. The Centreville (Maryland) *Sentinel* says, that the ground was frozen so hard in that neighborhood on Monday, that the farmers were unable to plow."—(Paper above cited, April 27, 1849.)

"*April Frosts.*"—Under this head the Cincinnati *Gazette* of the last cited date, is advised by a correspondent, J. L., that the snow-storm of April the previous year, was not so much of one as represented: that it was rather a "*snow-squall*" from the north-west, with rain, the snow melting as it fell: that the thermometer at Cincinnati was not down to below 35 degrees.

"*Better News about Fruit.*—The Hamilton (Ohio) *Intelligencer* of the 3d inst., says, two weeks ago it was thought that every species of fruit was killed by the frost. It is now ascertained that apples are yet abundant, and that some cherries and a few peaches are yet alive."—'Cincinnati *Gazette*, May 5. 1849.'

And now, to post up the statistics of the mortality from Cholera Infantum in New York, for this fatal year, the record gives 926 deaths, to contrast with 505 of the previous year, and 713 of the following year; and Adult Cholera was strongly epidemic.

It is a matter of no ordinary interest to note the extraordinary leaps in the rate of mortality on the years of the cold winters and blights in vegetation, as above pointed out, and which may be seen at a glance by consulting the synoptic map of the mortality of New York, accompanying the semi-centennial report, before referred to, appended to the report of the Board of Health for 1853: the mortuary track runs as follows, viz:

From 1804 to 1831 inclusive, a period of 27 years, the mortality, with slight exceptions, gradually increased from

2,000 deaths per annum, to 6,000, in round numbers, nearly in the ratio of the increase of the population, which, by the accompanying census returns, it appears, increased from 75,000 to 200,000 souls, in round numbers. In 1832 it went up with a bound from 6,000 to 10,000 deaths, after the coldest winter that had occurred for nearly half a century—since 1779–80, when history says the harbor of New York was frozen over, and munitions of war were transported on the ice from the city to Staten Island. Now, this is a remarkable increase of mortality, over 33⅓ per cent. in one year, and this coinciding with a most remarkable constitution of the seasons of two consecutive years; but the most remarkable feature in it is, that the increase of mortality in 1832, over that of the previous year, exceeds by 125 deaths only, the exact number of deaths in that year from Epidemic Cholera; that is, Cholera Adultorum and Cholera Infantum united!

The next year, 1833, the mortality sank to below 6,000 deaths, all told. But it convulsively rose again, obedient to the scorbutic law, after the cold winter and spring blight of 1834, to 9,000 deaths, in the summer of which year, Cholera Adultorum and Cholera Infantum were again strongly epidemic. It then oscilated between 7,000 and 11,000 deaths per annum for twelve years, till 1847, the year succeeding to several unfavorable cropping years, cold winters, and remarkably disastrous summers; — the year of the Irish famine—when the mortality suddenly rose from 11,000 to 15,000 deaths!—the census in 1845 showing over 300,000 inhabitants.

Another element presented, however, in 1847, viz: the enormous increase of immigration during that year: 129,000 emigrants arrived in the port of New York, driven by starvation from Europe, fit subjects for ship fever, which was the ruling form of disease under the peculiar constitution of those remarkable years. The mortality, it appears, held to this amount the succeeding year, emigration increasing to 189,000, and epidemic small-pox being added to the causes of death.

In 1849, after another long, cold winter, and *general blight* in vegetation in the spring, the mortality sprang up

fitfully from 15,000 to 23,000 deaths—Cholera Adultorum and Cholera Infantum again taking the field. The immigration in that year was 220,000. The increase of mortality in 1849, over that of the previous year, was 7,857, almost 33⅓ per cent.; and it is very remarkable, again, that this number should exceed the sum of the deaths of that year from adult cholera and Cholera Infantum only by 1,757, in a population swollen to 500,000, and an immigration of 220,000!

In 1850, the mortality sank to below 17,000, after which, to the closing of the Report, the end of the year 1853, it ranged above 20,000 annually, but did not in any year reach the excessive mortality that followed the intensly cold winter and spring blight of 1849.

These statistics of cold winters and blights in vegetation, joined with the statistics of adult Cholera and Cholera Infantum leave, it appears to me, no room to doubt the unity or identity of these hitherto supposed two diseases, or to doubt the implantation of the latent morbid diathesis in the system during the colder winters especially, and years of blight in vegetation, agreeably to the scorbutic law, to be developed in epidemic form by succeeding solstitial and dog-day influences, in the ratio of the force and continuance of the operation of the remote cause, viz: defective alimentation, and the intensity of the exciting causes, viz: summer heat, vicissitudes of temperature, foul air, errors in diet, fear, teething, weaning, and other directly debilitating, disturbing, and prostrating influences. This appears to be the law governing the choleric, *alias* the scorbutic disease; if any doubt it let them consult Lind, and others, on scurvy at large.

"The coincidence of blight and pestilence has been recorded from ancient times, and the wide-spread potato disease, which has now extended to almost every region of the globe, concurrently with the presence of influenza and cholera poisons in the atmosphere, may, possibly, be a modern instance of it. At all events, it is certain that seasons which are unusually sickly to large classes of human beings, are often alike unfavorable to the health and fruitfulness of many classes of plants." (See Report on Quarantine, London, 1849, p. 14.)

It is remarked, in speaking of the swarms of flies noticed in cholera years, and that they may have something to do with Dr. Snow's theory, that cholera is propagated by germs contained in the cholera evacuations, which germs, it is supposed, are distributed through the air and in the water used for household purposes, etc., that, "they seem at least to mark one phase of that *blight in vegetation*, and murrain among cattle, which has *preceded* the cholera scourge, and which still attends upon it." (*Ranking's Abstract*, Vol 9, No. 2, Jan. 1854, p. 219).

"London has been often laid waste by fires, and ten several times has it suffered the horrible ravages of epidemics. The latest and most terrible of these is known by the name of the great plague. It occurred in 1665, and destroyed above 68,000 persons. That of 1348 destroyed, it is said, 100,000 persons. That of 1461 was more terrible still. About the year 1487, the *sweating sickness* appeared first in London, and carried off an immense number. In 1500 the plague destroyed above 20,000 of the inhabitants. In 1518, the sweating sickness re-appeared and renewed its ravages. It returned a third time in 1528, and was so virulent that the immense number of its victims died in five or six hours after being seized. In 1603, a species of the plague destroyed more than 30,000 persons. The plague of 1625 killed more than 35,000." (*Malte Brun's Geography*, Vol. 6, p. 753.)

"M. Broussais believes that cholera has reigned in Europe at former periods (a d'ante epoques), and that it is the same epidemic which, in the fifteenth century, was called the *black plague*." (*Med. Chirurg. Review*, Vol. 17, N. S., p. 200.)

I throw in the above quotation from Malte Brun without any further comment than the quotation of the belief of M. Broussais affords, not being in possession of medical historical data, at present, sufficient to enable me to express an opinion as to the identity of cholera and the sweating sickness, or black plague of former epochs: it looks reasonable. The constitution of the seasons immediately preceding those great epidemics, and all others, may throw light on the subject, and is an interesting matter for research.

The coincidence of blight and pestilence is established by the quotations from the able London Report on Quarantine and Ranking's Abstract, but hitherto the natural law thereof has not been explained, it would seem. The blight always precedes the pestilence or the sickness results from a blight and dearth of vegetable food and fruits, and not from a poison in the air that destroys people and potatos, as may be inferred from the quotations.

Vegetables elaborate the soluble salts of soils, which mineral substances, so elaborated to succulent vegetable food and fruits, are *absolutely necessary* in human health. Some contain iron, some soda, some potash, some lime, some phosphorous, some sulphur, and so on; and to give them a relish, a kind Providence has involved them in succulent and pulpy textures, of such attractive forms as oranges, lemons, peaches, potatos, turnips, etc., and flavored them with acids most greatful and inspiring to the gustatory sense. Now, if by a late spring frost all the fruits are cut off, and by a summer drought all the vegetable crops fail and a cold winter follows, during which there is a great demand for the best quality of blood, in order to maintain animal heat and healthful nutrition, where is a nation, and more especially the confined population of cities, to get the requisite iron for the blood, phosphorus for the brain, lime for the bones, potash for the muscles, soda for the chylopoietic viscera, sulphur for the skin, hair, and nails, and the whole inventory of the chemico-vital laboratory's necessary supplies? Pork and beans and bread and coffee do not afford them fully, by any means. They contain the nitrogenous elements largely, as well as the food of respiration, and are good as far as they go; but without a daily supply of the acids and soluble salts, containing oxygen and the necessary mineral bases in large proportions, they soon obstruct and oppress the healthful processes of the animal machine. The mucous membranes of the primæ viæ give way first, and to repair these the blood is sent thither, (*ubi irritatio ibi fluxus*) hyperæmia, congestion, disintegration follow: the more tender, feeble, and wretched in community begin to drop of winter and spring diseases, while the stronger and better protected drag

through the spring with a lethargic dullness and inertia; and when the summer heat strikes the community an epidemic collapse ensues, conformably to the scorbutic law. The white-wash brush is then plied; the streets, alleys, gutters, sewers and cess-pools cleansed; the air accused; Deity invoked; commerce quarantined; a day of fasting and prayer celebrated; Physic strikes in the dark; but all in vain—the natural law is not discerned. On the coming in of plentiful crops of vegetables and fruits, which occurs in autumn, the public health is again restored. And generally after cold winters, abundant crops are produced the following seasons, because the hard frosts more effectually disintegrate the rocks and oxides, to be dissolved by the spring rains, and imbibed by vegetation and elaborated in delicious fruits and vegetables.

"As soon as a generous public diffused the comforts of life among the seventy thousand destitute emigrant population of New Orleans, last summer, the pestilence, [yellow fever epidemic of 1853,] which was sweeping into eternity three hundred a day, immediately began to disappear, before frost or any change in the weather." (Cartwright—see Report on Sickness and Mortality in Emigrant Ships, Washington, 1854, p. 134.)

There may be found cavillers who will object that this theory is all false, because, they may urge, it is not capable of a world-wide application, since cold winters and hard frosts never occur in intra-tropical regions, and Cholera is a native disease of a very hot climate, viz., India. I meet this objection by observing that the argument I have advanced is irrefutable in its application to extra-tropical regions; and that in earlier days, and not an hundred years ago, it was contended by Lind,* Trotter, and other distinguished writers, that scurvy could not be a disease of tropical countries; could never find subjects there, on account of the perpetual warmth and verdure, and the almost spontaneous production of a never-ending abundance of anti-scorbutic fruits and vegetables. But later observations have settled the matter that

* Lind on Scurvy, p. 262.

they were mistaken; that blights from drought, rains, and floods, occur as well there; and that scurvy does often rage fiercely as an epidemic in tropical countries, as well as Cholera. Indeed, the most powerful of all the exciting causes of scurvy, is heat; and, as I shall presently show by a quotation from the paper of an English surgeon of the army; *in India the scurvy and cholera raged simultaneously among the troops in the hottest of summer weather:* and to illustrate the fact that there is an annual variation in the meteoric influences within the tropics, arising from the swing of the seasons, capable of producing these two forms of *one and the same disease*, or rather waking it into activity from its *latent* condition in the system, as well as other forms of disease, precisely according to my views, I quote as follows:

"Nearly two hundred years ago, a Portuguese named Mandelo, in describing the diseases at Goa, makes the following statement: 'The change of the seasons from one extremity to another, is the cause of many diseases among the Portuguese, but the most common are those which they call *mordexin*, or *mordechin*, the Hindoo name for cholera, which kills immediately,'" etc. (Macintosh's Practice, p. 284.) Goa is in latitude about 15° N., on the west coast of Hindostan.

"In the year 1817, (the date of the great out-break of the disease in India,) cholera was epidemic in England, and was described in 1818 by Dr. Ayre." (Medico-Chirurgical Review, Oct. 1833, N. S., 19, p. 457.)

It is said of the great out-break of cholera in India: "Of the origin of the epidemic we know no more than this: that previous to its appearance the seasons were extremely irregular and unnatural, the people sickly to a great degree, and the country inundated." (Bengal Report on Cholera of 1817. Med. Chirurg. Rev. vol. 17, p. 94.)

It is shown in the Bengal Report, that the most remarkable constitution of seasons prevailed in India in 1816 and 1817: that the summer of 1816 was one of intense and unusual heat, and the winter of 1816–17 one of extraordinary cold and humidity: that the whole country was inundated with the greatest floods ever known, and sickly beyond all previous ex-

perience. It is also stated that the rice crop of 1817 failed from this inundated condition, and that the breaking out of cholera was ascribed to the general blight of vegetation, and damaged quality of the rice crop; but it is objected to this that the cholera appeared in the early part of the season, in certain places, before the crop was matured or even planted; but this does not prove but that a succession of blighting influences prevailed that abridged production *generally* during several previous years, and rendered the whole country sickly; this is stated to be the fact. The climax came in 1817, after an unusually cold, wet winter, during which the general sickness that had everywhere prevailed, abated; but it was a delusive calm.—When the heat of the following spring and summer struck the inhabitants, the poor in the cities died by thousands of cholera.

What a similitude! Who would have believed that the constitution of the seasons of 1816 and 1817 in India, and of 1831 and 1832 in the United States, could have been so similar? And what constitution of seasons marked the advent of cholera in France?

"The year 1832 was particularly remarkable for the sharp and smart cold winter, and the dryness of the summer. The year 1831 had been more damp than dry, more warm than cold."—Report on the Cholera of 1832 in Paris, translated and published in New York, 1849, p. 90–93.) How exactly like the same years in the United States!

The same general law, then, always governed cholera in India, in England, France, the United States, and every where else, that governs it now—"the change of the seasons from one extremity to another:" and yet without a predisposition, or the remote cause being inlaid by abridgement of food—*defective alimentation*—"the change of seasons from one extremity to another," is inadequate to produce it, or everybody would have it annually. The predisposition is easiest laid in the tender and fragile; hence delicate infants and broken down adults are its readiest victims. It is all called Cholera in Europe and Asia, whether occurring in infants or adults.

The statistics of the mortality from cholera in Paris in

1832, show that the deaths in subjects under five years of age were 24 in 1,000; in subjects from five to fifteen years of age, 5 in 1,000; in subjects from fifteen to thirty years of age, 10 in 1,000; in subjects from thirty to sixty years of age, 27 in 1,000; in subjects from sixty to one hundred years of age, 63 in 1,000.

Of men the mortality was 21 in 1,000; and of women 22 in 1,000. In the suburbs of Paris, the mortality of women was *one-fifth* greater than of men. Senility, then, mature age, infancy, and the female sex, are the most liable. This illustrates the mortality from Cholera Infantum in the United States: all dying of Cholera under five years of age are reported *Cholera Infantum.*

I will remark here, that the laws governing the inlaying of the scorbutic diathesis, may not be fully explained by these views—the subject is but obscurely understood in the present state of medical science. That extreme meteoric impressions, as cold and moisture, or heat and moisture, powerfully co-operate with defective alimentation to weaken and congest the internal capillary system, there can be no doubt: thus digestion and assimilation will be obstructed by outer agencies acting in the same direction with a daily improper or defective dietary. Under these circumstances, the blood will be more rapidly starved of its proper elements, and thoroughly impoverished; and thus the scorbutic diathesis may be inlaid and fully developed, no doubt, in summer or winter, under intra-tropical or extra-tropical influences. In illustration, I will quote from a very able paper on Cholera by Mr. Thom, surgeon to Her Majesty's 86th regiment, at Kurrachee, India.

After stating it as his opinion that the existence of a *ho atmosphere* loaded with moisture, and at the same time in a stagnant state, is a cause of cholera, independent of any chemical change in it, he discusses the morbid agencies which he thinks induce the *changes in the blood*, viz., a loss of the solid constituents—as in scurvy—that must exist to constitute what he calls the latent condition of Cholera. The improper quality of the soldiers' rations he places first among the morbid agencies. He says they are the same in

kind and quality in India as in Canada—as much meat through an Indian summer as a Canadian winter—which tends powerfully to congest the system in that hot climate where there is a great deficiency of oxygen in the air. He dwells also on cutaneous exhalation as a morbid agent, which, he says, is wonderfully super-abundant, calling for some ten or twelve pints of drink per day for each soldier, never omitting the *ardent;* which inordinate action of the cutaneous capillaries, he thinks, tends further to internal congestions; and I will add to wash away the soluble salts of the blood—the hydraulic cement of the whole fabric. Quere, would the soldiers have sickened on ten pints each per day, of lemonade, or effervescing soda powders, and a dietary of vegetables and fruits, chiefly? but to the quotation.

"Latent Condition of Cholera.—The state of the system referred to as resultant on chemical change of the constituents of the air, in which carbon is accumulated in the blood, and fibrin and albumen diminished, will vary in degree according to idiosyncrasies, habits, and constitution, so that certain numbers of a community will be affected to an extent bordering on, or breaking out into open disease. Noxious agencies whether of atmospheric origin acting on the skin and lungs, or as poison introduced through the assimilating functions, when applied in a minute degree, but steadily kept up for a length of time, have a tendency to produce effects that are called accumulative. Their action is latent, but not the less certain, till all of a sudden it is developed as if the whole had been suddenly concentrated into one overwhelming dose.

"Connection with Scurvy.—The scorbutic diathesis furnishes a forcible example of this; and sudden death is not only induced by slight causes of excitement, in men laboring under it, but even those who have exhibited no alarming signs have been equally affected. This is exceedingly applicable to cholera, between which and scurvy there is a great analogy in the state of the blood; and on cholera subsiding the scurvy appeared in our regiment, and also in other corps.

"Sudden Climax of Accumulative morbid changes.—If

then, by a sudden climax of all the causes of this latent diathesis, a state of weather inducing universal congestion, almost approaching to obstruction of the vascular system, occurs, can we be astonished that life will, in many, be abruptly cut short, as if some lethiferous draught had been swallowed? Such, I am firmly persuaded, is the only rational way of accounting for those numerous cases of cholera which terminated fatally in a few hours, without those symptoms which nature usually exhibits in a salutary effort to remove local or general congestion."—(*Medical Times*, March 11, 1848, p. 388.)

Thus it is proved past all doubt, that the causes which produce scurvy exist as well in tropical countries as in the higher latitudes; that changes of the seasons, floods, inundations, blights in vegetation, or the abridgment of the productions of the soil causing deficient or defective alimentation, are the causes of it, the same as in colder countries; proving conclusively that the theory of the scorbutic nature of cholera is susceptible of world-wide application.

I cannot but marvel that the identity of cholera and scurvy should have escaped Mr. Thom's powers of observation, when he saw them so nearly and closely associated. Still the same observations occurred to me years before the truth was clearly established in my mind. I not only saw the scurvy left in patients who recovered from cholera, but I saw it in many before the attack came on; and as I shall illustrate by cases before I close this essay, successfully treated *Cholera Infantum* as *scurvy in infants*, whose mothers labored under that form of it called *Nursing Sore Mouth* or *Puerperal Anœmia*, twenty years ago, by the administration of anti-scorbutic remedies.

Since the year 1832, when Cholera Adultorum first became epidemic in the United States, the records of mortality for the city of New York, show that down to the close of the year 1853, 12,044 adults have perished of it in that city, and 10,044 infants of Cholera Infantum. From 1804 to 1831 inclusive, 3,308 infants died of Cholera Infantum in New York, which swells the mortality from *Cholera Infantum* in that

city, during the last half century, to 13,352; and from *Infant and Adult Cholera united* to 25,396 souls!

I will now endeavor to illustrate the unity of these hitherto supposed two diseases, and the essentially scorbutic nature of the *choleric disease*, by the statistics of emigration: this constitutes an important chapter in its history.

The blight in vegetation and dearth of provisions in Great Britain and Ireland, as well as on the continent, in 1847, caused thousands upon thousands of foreigners to emigrate to the United States. Over 100,000 emigrants left the British Isles for this country during the first half of that year.—The *scurvy* prevailed in England, Ireland and Scotland to an awful extent, imputed to the blight of the potato, as may be seen by reference to the British medical journals of that year; and typhus fever and cholera were associated with it. An hundred thousand persons and more died that year in Ireland alone; and nearly every Irish emigrant who came to this country had the inlaid and accumulated scorbutic depravity lying latent in his system. "There is nothing unnatural in the desire of the unfortunate Irish to abandon their cheerless and damp cottages, and to crawl, inch by inch, while they have yet a little strength, from the graves which apparently yawn for their bodies. What will not poor humanity do to avert the blow which death seems to aim?

Inlaid or latent scorbutus in embarking emigrants, modified by the constitution of the seasons, and by the exciting causes, as sea-sickness, inaction or sloth, poor diet and foul air on ship-board, and, *may be*, by a *specific typhus infection*, was mostly developed in the form of ship fever, as it reached our shores, till the next year, 1848, when the choleric form predominated; and after the intensely cold winter of 1848–49, and succeeding spring blight, enough subjects were prepared, or charged with scorbutus in the latent manner, for an epidemic out-break of it in the choleric or hemorrhagic form in this country, under the powerfully exciting causes of summer heat and vicissitudes of the weather.

Of the causes of sickness in emigrant ships, Dr. Cartwright, of New Orleans, speaks as follows: "Provisions are not only soon deteriorated in quality by heat and mois-

ture, but also if exposed to human emanations in a concentrated form, as they always are when deposited in the steerage of a crowded emigrant ship. The food partaken of in such places is so deteriorated in quality that it is digested with great difficulty, and it is apt to cause vomiting and diarrhœa. That scurvy, cholera, dysentery, ship fever, and other pestilences are mostly caused by eating food deteriorated in quality, drinking bad water, and breathing an atmosphere loaded with the moisture of human exhalations, there can be no doubt." (Hon. Hamilton Fish's Report to the Senate of the United States, on the Sickness and Mortality in Emigrant Ships, before quoted, p. 126.)

Now infants of this class of progenitors—scorbutic, sickly emigrants—if not still-born, die of *Cholera Infantum*, in great numbers, in all the entreports of the United States, every summer; and many mothers, also, die of—*a sudden*, soon after delivery; only explained by the scorbutic law.

Dr. Isaac Wood says, (Report above cited, 105.) "About twenty-seven years ago, typhus, ship or prison fever, for they are the same, prevailed to an awful degree in our largest prison and pauper establishments. The disease got into the lying-in department and committed dreadful ravages. Women would be confined, have easy and natural labors, be comfortable twenty-four or forty-eight hours, and the next twenty-four or forty-eight hours be corpses."

The average number per annum of *still-born infants* in New York, for the seven years immediately preceding the year 1847, was 790; and the average number per annum for seven years thenceforward, including the year 1847, that is, from 1847 to 1853 inclusive, was 1,377: a disproportionate excess of 281 per annum over the average number called for from the increase of the population—an over proportion of 20.4 per cent. per annum.

The average number per annum of *infants dying of Cholera Infantum* in New York, for the seven years immediately preceding 1847, was 453; and the average number from 1847 to 1853 inclusive, was 770: a disproportionate excess of 142 deaths per annum, over the average number called for by the increase of the population—an over proportion of

twenty per cent. per annum, exactly. What striking facts and coincidences!

The census returns of 1845 and 1850 are taken as the two means of the above septennial periods, or averages of the population. That of 1850 is the true mean period of time for the last seven years, and that of 1845 one year too late for the first seven years, which throws the results of the above calculations, it is true, a little over the excessive or disproportionate mortality called for, both still-born and from Cholera Infantum, but without affecting the relation to be seen between these two causes of death in the agreement of per centage.

These statistics show that some element, causing death in infants, exists in New York, associated with immigrants, and that it is operative before birth. That this element or cause of death is scorbutus, is to be inferred from sundry reasons. The fœtus is not obnoxious to meteoric influences, nor to other causes of disease and death external to the mother. Emotional causes, it will not be contended exist in the unborn infant; and it is, at least, questionable if they can reach it in utero through the mother. Constitutional disorders and diatheses do, some of them, pass from mothers to infants in utero, and scorbutus is in this category.* The nutritive function appears to be the only channel through which contamination can pass, and defective nutrition is the foundation of scurvy. Sudden death from shock is a scorbutic law, and most of the still-born infants die from the shock occasioned by the uterine efforts upon them. Where mothers labor under scorbutus, it has been found that a large proportion of their infants at birth or a few weeks old do also. The scorbutic diathesis is a prolific cause of abortion and premature birth. These reasons leave no room in my mind to doubt the hidden element of death in question being scorbutus, This conceded, the affirmative of my proposi-

* Bruccœus, who wrote in 1589, says: "The scurvy is endemic in particular countries from their situation, air, water and food. In these countries, scorbutic mothers bear scorbutic children, often miscarry, at other times bring forth dead fœtuses." (Lind on Scurvy, p. 315.)

tion that Cholera Infantum is a scorbutic affection is equally sustained by the argument, for the statistics show that infant mortality from *it* is associated with emigrants in the same ratio.

Not to make use of some of the abundance of materials that offer in proof of the scorbutic condition of immigrants, and introduce it in this connection, would be doing injustice to the paramount importance of the great question, the true cause and essential nature of Cholera Infantum. I shall therefore draw a few extracts from the Senatorial Report before quoted on the Sickness and Mortality in Emigrant Ships, begging the reader to bear in mind what I have incidentally let fall as to the nature and pathology of scurvy, viz: that it is a slow poisoning from the want of proper nutrition, rather than from the introduction of anything deleterious—a negative poisoning that infallibly ensues when the natural laws in regard to diet are daily infringed by the absence of succulent vegetable food and fruits, it being nature's law that omniverous man should have a variety of animal and vegetable food, but more especially the latter.

At page 79, in Mr. Bierwirth's reply to the circular of the Senatorial Committee, occurs the following paragraph, written in January, 1854:

"The present state of things is, in a modified form, a repetition of what was witnessed in 1847–48, when, (as mentioned in a Report of the Commissioners of Emigration of the State of New York) the number of persons who perished by ship fever at sea, and in the various emigrant hospitals in American ports, was estimated to exceed 20,000. There is also a remarkable analogy between that period and the present [1854] in the high price of bread-stuffs and all other articles of human food; and this confirms me in the opinion expressed years ago, and adhered to ever since, that the mortality at sea is mainly, if not entirely, owing to the want or insufficiency of wholesome nourishment during the passage. The subject at that time attracted the attention of the New York Chamber of Commerce, and a committee of that body to whom the matter was referred, arrived at the conclusion that the main causes of the many deaths at

sea, were, ' want of food and want of pure air in the between decks.

At page 80, in the Report to the New York Chamber of Commerce, accompanying Mr. Bierwirth's communication, occurs the following: "Next to the miserable state of health in which so many emigrants embark, the great causes of the deplorable condition in which they arrive in our ports are—

"Want of sufficient and wholesome nourishment during the passage, and want of pure air in the between decks or steerage, where emigrant passengers are generally located.

"The Chamber of Commerce is doubtless aware that emigrants from Great Britain and Ireland can claim from the ship that carries them nothing in the shape of food, except one pound of bread and three quarts of water each per day; and it is a well known fact that even this they cannot always obtain—that the law is shamefully violated—that vessels leave Liverpool without providing the required quantity of bread. But all nourishment beyond bread and water, must be furnished by the emigrants themselves, and it is their business to get it cooked as best they may. The consequences of this arrangement to the poor, careless, improvident people are self-evident; many of them embark without any provisions of their own, and very few, if any, with a sufficient supply; many have not the means to buy food, and those who have deceived themselves as to the duration of the voyage; and hence it is doubtless true that not one of all the emigrant ships from British and Irish ports has a sufficient supply of proper food for all on board."

Surely no medical mind can contemplate the above facts and deny that scurvy is inlaid in every emigrant: it were just as safe to deny that two and two make four. But thousands—the majority—are saturated with it, "died in the wool" before embarkation, it appears, for the want of food aboard, is placed as second, "to the miserable state of health in which so many emigrants embark," and we have seen that, that miserable state of health was *scurvy*, so plainly unmasked in 1847 that no medical tyro could mistake it; and

the communication of Messrs. Oelrichs & Co., p. 88, confirms the fact of the wretched state of health in which emigrants embark, viz:

"The recent mortality on board of emigrant vessels was, we believe, mainly the natural development of disease contracted before embarkation, and not owing to want of attention on the part of the master or his subordinates."

At page 89 occurs the following paragraph in Mr. Rucker's communication, written in 1854:

"The recent alarming mortality on board emigrant vessels from Europe calls for the attention of the legislature. It has been stated that during the month of November last, 28 of the whole number of emigrant ships which arrived at New York had cholera on board, and that of 13,762 passengers no less than 1,141 died by this disease, and between four and five thousand were afflicted with it during the passage."

It appears by this, that fully one-third of all—"between four and five thousand of 13,762," were so imbued with scorbutus, according to my view and explanation, that they fell under its law of collapse during the voyage. Woe to such as were with child and that gave suck in those days; and worse woe to the sucklings who drew their nutriment from such polluted fountains. Cholera Infantum is ever the sure inheritance of infants so bred and born, and if they survive *it*, their whole lives are embittered by constitutional feebleness.

Again, same page and communication:

"Passengers providing themselves get cheated in every way—quantity, quality and price. The consequence is, that the poorer lay in not only an extremely small stock, but also a defective stock, and trust to the good nature of those better off, or to chances to appropriate to themselves what does not belong to them, and lastly, rely on the master of the vessel to save them from starvation, but after all, suffering from want of proper nourishment."

Again, same communication, page 96:

"In stormy weather owing to an arrangement of the cook's galley, passengers may, for days together, be unable to cook at all. Sea-sickness weakens, makes lazy and indifferent, so

that even the most energetic captains complain that they are unable to enforce cleanliness unless aided by law; and threats to treat as mutineers such as will not obey, are often necessary. Many passengers have to be brought on deck by main force."

Now here are described as being present in these emigrant ships, all the causes of disease that in earlier days developed sea-scurvy, but that now-a-days develop either cholera or ship-fever; and the only reason that can be assigned for the change in the mode of manifestation, if indeed there be any, is an improvement in the human constitution, brought about by an improved agriculture, horticulture and fruit-culture, giving it greater powers of resistance, or greater protection against scurvy. That human life is lengthened by the multiplied comforts of modern civilization, commerce and the arts of peace and rural industry, is proved by the vital statistics of the Life Insurance Offices. What then were the collapsing symptoms of scurvy in the early sea-voyages? What was the mode of death, when "deaths occurred from scurvy to the amount of eight or ten a day in a moderate ship's company; bodies sewn up in hammocks and washing about the decks, for want of strength and spirit on the part of the miserable survivors to cast them overboard," as in Lord Anson's voyage? Why, according to the best accounts, it took on the form of "*putrid fevers*, pleurisies, jaundice, and violent rheumatic pains," so says Lord Anson; and Ellis, the explorer of a "north-west passage" in 1746, says of his scurvied crew, that, death carried them off, either by a *flux* or a dropsy." It appears also by Lord Anson's account that the epidemic increased with hot weather, and that the mortality in one of his ships was forty-three in April, twice that number in May, and as many more by the middle of June, when the squadron arrived at the island of Juan Fernandez, and the sick were put ashore, numbers dying in the boats in being got ashore, and the epidemic still continuing very fatal for twenty days after landing. "The Centurion, from her leaving England, when at this island, had buried 292 men, and had but 214 remaining of her complement. The Gloucester, out of a smaller complement, buried the same

number, and had only 82 alive!" It would seem then, that the causes of disease were the same in the earlier voyages as in emigrant ships in these days, viz: want of proper and sufficient food; want of ventilation; and want of exercise. And it further appears that the *putrid fevers*, *watery fluxes*, etc., that carried off three-fourths of a ship's crew in former days were considered forms of scurvy. These are instructive reminiscences. Like causes produce like effects through all time.

I will introduce but one other quotation on this subject, which, coming from the source it does, is entitled to much weight, and should not be omitted. It is taken from the Report on Quarantine of the General Board of Health, London, 1849, before quoted, and is the experience of a gentleman who took passage in the steerage of a vessel to prove the comfortableness or otherwise of the emigrants' voyage to America.—See said Report, page 101.

"Before the emigrant has been a week at sea," says Mr. Stephen De Vere, "he is an altered man. How can he be otherwise? hundreds of poor people, men, women, and children, of all ages, from the drivelling idiot of ninety to the babe just born, huddled together without light, without air, wallowing in filth, and breathing a fœtid atmosphere, sick in body, dispirited in heart, the fevered patients lying between the sound in sleeping places so narrow as almost to deny them the power of indulging, by a change of position, the natural restlessness of the disease; by their agonized ravings disturbing those around, and predisposing them, through the effects of the imagination, to imbibe the contagion; living without food or medicine, except as administered by the hand of casual charity, dying without the voice of spiritual consolation, and buried in the deep without the rites of the church. The food is generally ill selected, and seldom sufficiently cooked, in consequence of the insufficiency and bad construction of the cooking places. The supply of water, hardly enough for cooking and drinking, does not allow washing. In many ships the filthy beds, teeming with all abominations, are never required to be brought on deck and aired; the narrow space between the sleeping-berths and the

piles of boxes is never washed or scraped, but breathes up a damp and fœtid stench, until the day before arrival at quarantine, when all hands are required to 'scrub up,' and put on a fair face for the doctor and government inspector.

"No moral restraint is attempted; the voice of prayer is never heard. Drunkenness, with its consequent train of ruffianly debasement, is not discouraged, because it is profitable to the captain, who traffics in the grog.

"In the ship which brought me out from London last April, the passengers were found in provisions by the owners, according to a contract and a furnished scale of dietary.

"The meat was of the worst quality. The supply of water shipped on board was abundant, but the quantity served out to the passengers was so scanty, that they were frequently obliged to throw overboard their salt provisions and rice (a most important article of their food) because they had not water enough both for the necessary cooking and the satisfying of their raging thirst afterwards.

"They could only afford water for washing by withdrawing it from the cooking of their food. I have known persons to remain for days together in their, close berths, because they thus suffered less from hunger, though compelled at the same time, by want of water, to heave overboard their salt provisions and rice. No cleanliness was enforced; the beds never aired; the master, during the whole voyage, never entered the steerage, and would listen to no complaints; the dietary contracted for was, with some exceptions, nominally supplied, though at irregular periods; but false measures were used (in which the water and several articles of dry food were served,) the gallon measure containing but three quarts, which fact I proved in Quebec and had the captain fined for. Once or twice a week ardent spirits were sold indiscriminately to the passengers, producing scenes of unchecked blackguardism beyond description; and lights were prohibited, because the ship—with her open fire-grates upon deck—with lucifer matches and lighted pipes used secretly in the sleeping-berths—was freighted with government powder for the garrison at Quebec.

"The case of this ship was not one of peculiar misconduct;

on the contrary, I have the strongest reason to know from information which I have received from very many emigrants well known to me, who came over this year in different vessels that this ship was better regulated, and more comfortable than many that reached Canada."

At page 118 of said Report, this subject is alluded to as follows, viz. "The late Chairman of the Emigration Commission, T. F. Elliott, Esq., in his examination by a committee of the House of Lords, says:—'One of the most important pieces of evidences upon emigration which I have ever seen in my life was contained in a letter which I received from Mr. Stephen De Vere. He is a private gentleman who has gone from Ireland to Canada, wishing to judge for himself whether it was a good place to which to encourage his poorer neighbors to proceed. He voluntarily exposed himself to the inconvenience and hazard of taking his own passage in the steerage, and after his arrival he wrote to me, at my request, a very full letter, giving an account of all that he observed. This letter has, I think, weighed much with the Government in forming the conclusion that it was desirable to endeavor to amend the law in the course of the present session."

So much for the evidences drawn from emigration; and if this mass of statistics and reliable testimony does not fully sustain the conclusions to which I have come, that emigrants are scorbutic, and that cholera in them and Cholera Infantum in their offspring are but modes of manifestation or modified forms of the same old disease, scorbutus, I ask, whither shall the researching medical mind turn for evidences in support of a rational view or theory of cholera and Cholera Infantum? Where but in the scorbutic theory is there any light? It is hardly necessary to sum up the testimony which this branch of this subject offers in support of the affirmative of my propositions, so strikingly do the facts and statistics sustain them. Can any medical mind revert to an hypothesis again, go back and grope in the dark, after a rational philosophy of noon-day truth has thus unfolded the unquestionable nature of Cholera Infantum, and illustrated by statistics (not gotten up for the purpose) the laws of its

development? I think not. Can any one doubt as to the cause and essential nature of the choleric disease after considering its connection with emigrants; their contamination with scurvy; the collapsing law of *its* manifestation; and the parallelism between the over-percentage of mortality reported still-born, and the deaths from Cholera Infantum in New York since 1847, when the enormous increase of emigration to this country set in? I think not: the matter must be as good as settled in the mind of every candid reader, it appears to me.

There is another particular in the history of Cholera Infantum that must not be passed unnoticed; it is this, that while it is generally confined to infants of the poor, wretched, and ill-fed classes described, it occasionally manifests itself in infants of the better classes, families supposed to be sumptuously fed; apparently belying the theory of its scorbutic character. Those practitioners who attend the higher classes in cities, even when the disease is raging among infants in the lowest walks of life, see but little of it. But this exception only proves the rule—luxury and effeminacy are closely associated. Many a mother in high life becomes dyspeptic, scorbutic, and hopelessly dilapidated by luxury, inaction, and rapid breeding, and entails the most faulty stamina upon her offspring, and affords from the breast the most unhealthy nutrition. Neither mother nor infant under such circumstances can appropriate the materials of a healthy nutrition, for the want of organic vigor; and besides, the most mistaken prohibitions are often enjoined by medical direction—the acids, fruits and vegetables being interdicted, (of all articles of diet, with good beef and porter or wine bitters added, the most needed) while crackers and tea, toast, soda biscuits, and cocoa are daily inflicted, to the perpetuation of the constitutional difficulty in both mother and child. It thus becomes an heir-loom in families, or an hereditary taint. Dr. J. Forsyth Meigs, (*Diseases of Children, page* 202) says: "My own observation leads me to believe that the disease is apt to occur in certain families. I am acquainted with one family in this city [Philadelphia] in which eight out of ten childen suffered from the disease.

Of these children, four have grown up, married, and have children. Two of these families have each lost a child by the disease; in a third, the two children of the family have been exceedingly ill with it; while in the fourth, some of the children have been sick, though not to the same degree. Again, I have attended this summer, (1847), two children in a family, one not quite two years, and the other three months and a half old, who have both been very sick with the disease. The elder child was ill the summer before in the same way. The mother of these children was herself very ill with the disease on several occasions during her infancy, as was also her brother."

This sustains my views of the ante-natal history and scorbutic character of Cholera Infantum, and accords so harmoniously with the physiological dogma that parental organization and physical stamina are transmissible to offspring, and with them liability and aptitude to the same forms of disease their progenitors manifested, that in this sense it must be conceded Cholera Infantum is hereditary, as Dr. Meigs inculcates, but without explaining why and wherefore. Nor is the dilapidated mother always chargeable, or chargeable alone, with the offence of entail: the sin often lies as well at the door of a besotted father. Where the fathers have eaten sour grapes, after this fashion, the children's teeth are wont to be set on edge. Repeated, daily intoxication for weeks and months together, necessarily lays the scorbutic diathesis in the system, from defective alimentation and abridged nutrition, as I have sufficiently satisfied myself by the physical signs in mania a potu, and abundantly verified by the success of anti-scorbutic treatment: and this view also explains why so many drunkards die of Epidemic Cholera. I have also further observed many cases of mild insanity to occur during scorbutic seasons, in both sexes, marked by the physical or objective signs of incipient or latent scurvy, and have found them medicable by anti-scorbutic treatment; which facts are, by no means, irrelevant in tracing the history of Cholera Infantum, for I have repeatedly treated infants and the older children for it of parents so affected; showing that the whole family were suffering from defective

alimentation, and that scorbutus affects the brains as well as the bowels; throwing much light on the nature and character of the head symptoms in Cholera Infantum.

The inordinate use of tobacco,* also, I have observed, enfeebles many a father, interfering so much with the digestion and assimilation of food, from the constant ejection of the saliva, that the physical signs of latent scurvy appear in the mouth, and a scorbutic feebleness is visited upon the offspring, evidenced by a proclivity to Cholera Infantum. But, probably, the greatest source or cause of scorbutus in the cities of the United States is the everlasting round of a monodietary of pork, bread and coffee—pork three times a day! and but a stinted allowance of stale, city milk from slop-fed cows, not unaptly derided "chalk and water," for the most infantile members of the family. Contrast such a dietary with the abundance of nutritious, fresh cows' milk from clover-pastured animals, fresh vegetables and fruits, eggs and poultry to be found at the country farm-houses in the old settled region of Lancaster county, Pa., and no one need seek further for the reason why Dr. Eberle, "during a practice of twelve years in the country, met with but two or three cases of this disease in infants:" that county being the field of his observations in country practice.

EVIDENCES DERIVED FROM THE PHENOMENA.

No method I can pursue under this head, so far at least as the symptoms and anatomical characters are concerned, can be fairer or less exceptionable than to collate the descriptions given by writers of the supposed several diseases, which I hold to be one, or but modified manifestations of the same diathesis, viz: Cholera, Cholera Infantum and Scurvy, and allow the reader to judge whether or not my views are correct. The real philosophy of medicine, in investigating the phenomena of disease, seems to consist in ascertaining the actual state of the system, of which symptoms and signs are the exponents, and anatomical characters the post-mortem evidences.

*Harvey, who wrote on scurvy in 1675, attributes its occasional cause to the use of distilled spirits, and tobacco.—(*Lind on Scurvy*, *p.* 372.)

Bearing in mind, then, the views I hold of the scorbutic unity of Cholera and Cholera Infantum; the different degrees and shades in which the scorbutic depravity may be unconciously and unsuspectedly inlaid in the systems of thousands, young and old; the disparity in the age of the subjects, by which symptoms are always modified; the Protean character scurvy has always borne, and its collapsing tendency from extreme thermometric impressions, sudden vicissitudes of weather, fright, or other exciting causes; if I shall be able to show a general likeness in the supposed three forms of disease—a *oneness* of pathological condition in the system —no matter though some particular features may differ, as unwittingly drawn and misunderstood by artists, still the family likeness will pronounce the group a *triune malady:* but especially if added to this, I shall unfold in therapeutics that, the supposed differing forms of disease yield alike to the same treatment—the administration of anti-scorbutic remedies—what then will be the inference? plainly that the supposed three maladies are one and the same: no common sense view or conclusion other than this can possibly be maintained. It will never answer to say that these results arise from, or are owing to, a complication of scurvy with Cholera or Cholera Infantum, as in scarlatina, measles, small-pox, etc., where innoculation pronounces that there is *specific* cause for the distemper independent of scurvy: but the idea of a specific infection, or contagion being the cause of Cholera Infantum has never been mooted, and is fast fleeing the minds of those who entertain such a notion with regard to Cholera Adultorum.

When, therefore, a condition of the system is met with betokening low and ebbing vitality; when we see the whole fabric as it were dissolving, disintegrating, bleeding, either red, white, or mixed blood: the most delicate structures softening, congesting, infiltrating; petechiæ appearing; and somnolency indicating that the same mischief is going on in the brain as in the bowels and in the skin; away with nosology—fall back on general principles—prescribe not for a symptom, but for *the condition.* It matters not what name an epidemic manifestation of this condition in adults bears,

or in infants, or in sheep dying in the spring of the "rot" for want of turnips, or cattle of bloody murrain. It matters not though one set bleed from the nose; another from the stomach, and vomit it out; another from the intestines, and purge it off: or whether the blood or infiltration be sanguineous, fibrinous, sero-sanguineous, or only serous: the state, or pathological condition is one and the same, and it appears to me the only rational, philosophic, and truthful view to be taken of it is to consider it a scorbutic condition, and treat it accordingly. This will be rendered more plain by comparing the phenomena.

PHENOMENA COLLATED—NATURE AND SEAT OF THE DISEASE.

CHOLERA.

"Were we to attempt to illustrate in a few words the nature of cholera by examples drawn from analogous diseases, we should say that its choleric stage presented in a more intense degree the initiatory collapsed symptoms of certain bad fevers, before reaction had taken place, combined with excessive gastro-intestinal irritation; whilst the febrile stage bore a very close resemblance to such fevers after the establishment of reaction.

"The affection of the alimentary canal is essential and primary if any part of the disease is so; and it were vain to attempt to trace it to a morbid condition of any other organ or system of organs."-(*Dr. Brown—Cy. of Prac. Med.*—Vol. I., p. 412.)

"The probability is, that a poison is taken into the system, capable of making a profound impression on all its parts; and that among its effects, is either such a relaxation of the exhaling orifices as to admit the ready passage of the more fluid parts of the blood, and sometimes of the red corpuscles themselves, or such a modification of the circulating fluid, as to cause it to pass through structures which ordinarily retain it, or else a combination of these two conditions."-(*Dr. Wood—Practice of Med.* Vol. I., p. 691.)

CHOLERA INFANTUM.

"For my part, I am disposed to believe that cholera infantum is a disease of the mucous membrane of the alimentary canal, which, beginning with morbid development of the mucous follicles, independent of evident inflammation, occasions first supersecretions from those organs, and after a time runs into inflammation and its results, ulceration, softening and thickening.

"That it is not an inflammation in the beginning, is, it seems to me, clear, from the nature of the anatomical lesions, and from the facts that the early stage is often unaccompanied by any febrile movement whatever, and is not unfrequently attended with disposition to collapse, like that which occurs in the cholera of adults; but that it becomes an inflammation after the development of the follicular apparatus has lasted a short time, is also, I think, apparent, from the nature of the anatomical lesions, and from the circumstance that there is always more or less violent febrile reaction after the first few days."—(*Dr. J. Forsyth Meigs—Diseases of Children*, p. 297.)

SCURVY.

"Every phenomenon connected with scurvy, pronounces it to be a gastric disease. It commences in the stomach, and thence propagates its morbid action throughout the entire system of assimilating organs: to which we might add the organs of nutrition. Hence the change which ensues in the state of the fluids. The whole apparatus which prepares them being disordered in its action, it cannot be expected that they will remain sound."-(*Dr. Caldwell—Note in Caldwell's Cullen.*)

"M. Broussais contends that in scorbutus, whatever may be its cause, there is first an irritation of the internal membrane of the digestive canal; secondly, an imperfect assimilation of the elements, especially of fibrin and gelatin, either in the tissues formed out of them, or in the blood which directs them to different parts of the body: thirdly, that in consequence of defect of nutrition, a diminished cohesion of fibre ensues; which accounts for the imperfect contractility and fragility of the muscles, for the rupture of vessels and escape of their fluids, and finally, for the easy disorganization of the tissues."—(*Treatise on Physic, quoted in Cyclopædia of Prac. Med.*, Vol. IV., p. 115.)

Remarks on the nature and seat of the diseases.— What a parallelism! and "the *probability* is that" the slow poison which produces this parallelism in the *nature* of these supposed three forms of disease, as above described, is just what I have pointed out, viz: *defective alimentation.* The "profound impression" it is capable of producing, is pretty well understood in *Scurvy*—the relaxed solids and the oozing fluids are familiar illustrations; sometimes red blood, at other times only serum, and again mostly fibrin escapes from the vessels. No other essential morbid condition whatever has been pointed out, in either Cholera or Cholera Infantum. "The affection of the alimentary canal is essential and primary" in all, but it is not exactly inflammation: it is rather a stacis of the impoverished blood in the softened, weakened tissues at first, the evil lying latent, often without the subjects' being conscious of it, till the change of the seasons from one extremity to another, applies the torch to this magazine of morbid derangement, when something must happen—a climax must result—the critical moment has come—bleeding of some sort ensues—collapse follows—death or feeble reaction is the result. Thus, the essential *nature* of the morbid condition of the system appears to me to be identically the same in these hitherto supposed three forms of disease, modified by age and other circumstances, of course. Outside of this view, there is no light on the etiology and nature of Cholera and Cholera Infantum, and by these views all is made plain and easy of comprehension; for, as M. Broussais contends, whatever may be the cause of Scorbutus, irritation in the digestive canal, imperfect assimilation and defective nutrition, disorganization of the tissues and an escape of fluids, characterize it—and are not these also the characteristics unfolded in the study of the nature and pathology of Cholera and Cholera Infantum? Vomiting and purging, collapse and death, or feeble reaction, are resultant phenomena.

PHENOMENA COLLATED—LATENT CONDITION AND COLLAPSING TENDENCY.

CHOLERA.

Mr. Thom, surgeon in the British army in India in 1848, observed the "latent condition of cholera," as he calls it, and described how it is inlaid little by little, by "noxious agencies," as improper alimentation and extreme meteoric impressions, "till all of a sudden it is developed as if the whole had been suddenly concentrated into one overwhelming dose."

He compares it in its latent state and collapsing tendency to scorbutus, which he noticed in the regiments after the cholera had subsided. After illustrating the latent accumulation and sudden collapse of cholera by the scorbutic law, he concludes as follows:

"Such, I am firmly persuaded, is the only rational way of accounting for those numerous cases of cholera which terminated fatally in a few hours, without those symptoms which nature usually exhibits in a salutary effort to remove local or general congestion."—(*Times, March* 11, '48.)

"Cases have been frequently observed, in which fatal collapse supervened without vomiting; and others are on record in which there was neither vomiting nor diarrhœa. In some instances considerable muscular strength remains, and the patient suddenly rises up from bed with an expiring effort, and falls lifeless."—(*Dr. Wood, op. cit.*)

CHOLERA INFANTUM.

"Let any one take a walk in a summer morning, through the thickly built lanes and alleys of Philadelphia, he will be struck with the appearance of the children, reclining their heads as if exhausted, upon the breasts of their mothers, with a pale and languid countenance, a cool and clammy skin, a shrunk neck, and other signs of debility, wholly destitute of animation, without appetites, and on the very verge of cholera."—(*Dr. Parish on Prophylactic Treatment of Cholera Infantum—Quoted by Eberle, Diseases of Children.*)

"It may be sudden or gradual. Much more frequently the invasion is gradual."—(*Meigs—op. cit.*)

"It frequently comes on in a gradual manner.

"In some instances it commences and proceeds with such violence as to exhaust the vital powers and terminate in death in a single day.

"Death sometimes takes place most unexpectedly."—(*Eberle, Diseases of Children* p. 283.)

SCURVY.

"Scurvy is generally very gradual in its approach, so that it is scarcely possible to say in any particular case what was its precise time of attack. Attention is commonly first attracted by an unhealthy paleness.

"Sometimes, after remaining latent for a considerable time in the system, it breaks out fiercely and runs a very rapid course to its termination."—(*Dr. Wood—op. cit.*)

"The scorbutic diathesis furnishes a forcible example of this [latent condition,] and sudden death is not only induced by slight causes of excitement, in men laboring under it, but even those who have exhibited no alarming signs have been equally affected. This is exceedingly applicable to cholera, between which and scurvy there is a great analogy in the state of the blood, and on cholera subsiding, scurvy appeared in our regiment and also in other corps."—(*Dr. Thom, Med. Times, March* 11, 1848.)

"We have seen several, who, without pain, dropped down dead suddenly."

"We have seen some whose breast was so oppressed, that they died all of a sudden."—(*Lind on Scurvy.*)

Remarks on the latent and collapsing phenomena.—I have myself observed this latent condition of Cholera, Chol era Infantum and Scurvy; that is, the scorbutic diathesis to be very prevalent prior to the breaking out of epidemic Cholera and Cholera Infantum; and I have also observed that *every patient* who survived an attack, presented the objective signs of Scurvy, viz: hyperæmia of some portion of the mucous tissues of the mouth, generally of the gums, arches of the palate, etc., often petechiæ on the skin. "I am firmly persuaded," therefore, that "the only rational way of accounting for" the latent and collapsing phenomena, presented in Cholera and Cholera Infantum, is, to ascribe all to *Scorbutus:* take away the Scorbutic phenomena and there is nothing left. Dr. Good speaks of nausea and vomiting as usual phenomena in Land Scurvy; and the old authors speak of vomiting, purging, and even *Cholera Morbus*, as being symptoms of Scurvy. What were the acute, epidemic, collapsing and dying phenomena in Scurvy, in former days, in the time of Lord Anson's voyages, when eight or ten died a day out of a common ship's company, I have before explained, by quoting the descriptions of the disease then given, and although I have put the question to at least a dozen distinguished medical gentlemen, professors, and others, not one has ever answered it: nor what were the symptoms of Scurvy in infants. It may turn out that the collapsing phenomena in Scurvy were the same then, in both infants and adults, as now-a-days, seen in Cholera and Cholera Infantum. The truth is, there is no other known law than this latent condition of Scorbutus, this accumulative depravity in the system, that is adequate to explain the phenomena seen in Cholera and Cholera Infantum; and this does afford a rational and adequate explanation. Independent of any light from therapeutics, then, common sense calls for its adoption. But it will be shown in the proper place that therapeutics confirms what common sense approves in this interesting question.

PHENOMENA COLLATED—SYMPTOMS, COURSE, ETC.

CHOLERA.

"After watery diarrhœa, or other generally slight indisposition, vomiting and purging of a white or colorless fluid; violent cramps, great prostration and collapse, the last occurring simultaneously with the vomiting and cramps, or shortly after them. Should the patient survive the last train of symptoms, a state of excitement and fever supervene."—*(Dr. Brown, op. cit.)*

"In some cases the fever assumes the remittent type, and ultimately becomes intermittent."—*(Dr. Wood, op. cit.)*

"The commencement of the purging has sometimes preceded by several days the accession of the choleric stage; * * forty-eight hours has been its mean duration, calculated from a great number of instances."—*(Dr. Brown.)*

"Which diarrhœa is the first stage of a serous hemorrhage, and collapse is the natural consequence of the loss of the serous part of the blood."—*Medico Chirurg. Review, Oct.*, 1833.)

"The more we see of cholera, the more we are convinced that the disease is a serous hemorrhage from the alimentary canal."—*(Ibid.)*

CHOLERA INFANTUM.

"Vomiting and purging, with fever, generally of the remittent type, irregular spasmodic convulsions; and rapid emaciation, attacking infants and children."—*(Dr. Copland—Dictionary.)*

"Most authors agree that the disease generally begins with diarrhœa, which after a few days, or longer time, even, is associated with vomiting.

"In slight cases there is no fever, at first. In severer cases there is often a febrile reaction from the begining; while in very violent cases the earliest symptoms are those of collapse, generally soon followed by intense heat of the head and body, very frequent tense pulse, which subside, after some hours, to give place to a more or less remission, or to a return of the state of collapse."—*(Dr. Meigs, op. cit.)*

"When the discharges are violent and very frequent, the muscles of the abdomen, and even those of the extremities, are apt to become affected with spasmodic contractions."—*(Dr. Eberle, op. cit.)*

"I have known a child put to bed early in the evening, seemingly well, to wake at ten o'clock and have twelve large, fœtid, fluid evacuations before morning.

SCURVY.

"The precursive symptoms are lassitude, faintness, and pains in the limbs, so that business, or even company, is found fatiguing. After this, there are often shiverings, nausea and vomiting."—*(Dr. Good—Study of Med., vol. iii., p. 445.)*

"This species [land scurvy,] is sometimes marked by febrile paroxysms, with variable intervals, but usually occurring in the evening."—*(Ibid.)*

In Lind on Scurvy, the following are enumerated as symptoms of an attack, viz:

"Vomiting, retchings, and even cholera morbus. A vomiting is known to be scorbutic:

"First, by not yielding to the common remedies.

"Secondly, its sudden unaccountable remissions, and equally unexpected return.

"Thirdly, its seizing without any previous pain, disorder of the stomach, or distemper described by the ancients: but the most certain proofs are from the urine and pulse.

PHENOMENA COLLATED—SYMPTOMS, COURSE, ETC., CONTINUED.

CHOLERA.	CHOLERA INFANTUM.	SCURVY.
"The more elaborate secretions,—as those of the bile, urine and tears, cease, because the serous part of the blood finds an easier outlet through the exhalting surfaces."—(*Dr. Wood.*)	"In sudden and violent cases, the vomiting and purging are attended with the usual signs of exhaustion; quick, small pulse; coolness or coldness, with paleness of the surface, altered countenance, extreme languor, etc."—(*Dr. Meigs.*)	"Urine having a white, roundish, heavy sediment, like sand or brick-dust. "The pulse peculiar to this malady, is quick and small, but particularly unequal."—(p. 329.) "Hemorrhage is often profuse, cannot easily be restrained, and is accompanied with anasarcous swellings. "Rapid erosion or ulceration of the blood-vessels and discharge of blood, often accompanied with diarrhœa or dysentery."—(*Dr. Good.*) "The urine is scanty and high colored. The pulse is generally small, feeble and slow; and the skin below the healthy temperature; but cases occur in which the pulse becomes very frequent, and the surface febrile.
"The tongue in this early stage is clean and moist."—(*Ibid.*)	"The mouth is usually warm, and the tongue moist at first, and coated with a whitish, yellowish, or brownish-yellow fur."—(*Ibid.*)	"Throughout the complaint, the tongue is usually clean and moist.
"The features and whole body are so shrunken that the patient can hardly be recognized by his friends."—(*Dr. Wood.*)	"Simultaneously with the emaciation and œdema, aphthæ often appear on the tongue, cheeks, gums, roof of the mouth, and pharynx."—(*Ibid.*)	"Great emaciation usually attends the disease."—(*Dr. Wood.*)
"Various eruptive affections, resembling those of scarlatina, rubeola, erysipelas, etc.,	"Aphthæ finally appear on the tongue and inside of the cheeks."—(*Dr. Eberle.*)	"The purple eruption, for the most part, appears first on the legs, and after-

PHENOMENA COLLATED—SYMPTOMS, COURSE, ETC., CONTINUED.

CHOLERA.	CHOLERA INFANTUM.	SCURVY.
occasionally diversify the stage of reaction."—(*Ibid.*) "M. Albert repeatedly noticed an eruption of lenticular papillæ, of a red color. * * * In one case it extended to the mucous membrane of the mouth, pharynx, nose and eyes."—*Med. Chir. Rev.*, *vol.* xviii., *p.* 467.	"Petechiæ sometimes make their appearance on the skin."—*Meigs.* "Towards the fatal conclusion spots of effused blood under the cuticle sometimes appear on various parts of the body."—*Eberle.*	wards, at irregular periods, on the thighs, arms and trunk of the body.
"In the progress of the fever, the tongue becomes black, and sordes accumulate on the teeth; the intellect torpid, though still the patient can be roused, but the moment conversation ceases, the eyes are turned up in the orbit, exposing, through the half closed eyelids the red selerotica, and tho patient is in a profound stupor."—*(Dr. Brown.)*	"Petechiæ occasionally appear on the surface of the body, and a small vesicular eruption on the breast; the skin sometimes assumes a dull, dirty hue, and the conjunctiva appears blood-shot."—(*Dr. Wood.*) "The little patient at last lies in a comatose and insensible state, with the eyelids half open and the globe of the eye turned up so as to completely hide the cornea."—*(Dr Eberle.)*	"The spots are frequent on the interior of the mouth, particularly the tonsils, where they are sometimes raised or papillated. It is here the first hemorrhage usually issues, though, as the disease advances, blood also flows from the nostrils, lungs, stomach, intestines and uterus, all of which organs, together with the heart, are sometimes found studded with spots on their surface, on examination after death."—(*Dr. Good.*)
"Pneumonia, bronchitas, and pleurisy, also, not unfrequently occur; but the most dangerous affection in this stage of oholera, is perhaps that of the brain, oharaoterized by severe headache, drowsiness, low delirium, stupor, coma, subsultus tendinum, and sometimes by convulsion or paralysis.	"The fatal event is almost always preceded by symptoms indicating violent disease of the brain. These are drowsiness, passing into stupor and coma * * convulsions, either general or local, which are followed by rigidity or paralysis of some of the limbs."—*(Dr. Meigs.)*	"Along with the prostration of the vital powers, there is often displayed a strong tendency to local congestions of a low inflammatory character, attended with the effusion of blood or fibrin. "These congestions and effusions may take place in the substance of the lungs, simulating pneumonia, in the cavities of the pleura, and pericardium, giving rise to dispnœa and fatal oppression; within the cranium, producing drowsiness, coma, and apoplexy.

CHOLERA	CHOLERA INFANTUM.	SCURVY.
"Intelligence is sometimes retained till within a few moments of the close.		"The patient often retains full possession of his senses and intellect to the close."—(*Dr. Wood.*)
"The dejections are of a whitish color, thin and watery, resembling rennet whey, thin gruel, or rice water; and when allowed to stand, separate into a colorless fluid and a white floculent insoluble matter, which subsides. They are sometimes tinged with bile, and a little blood is occasionally discharged. "In some instances they are brown, or of a deep chocolate color "The matter vomited is generally similar to the stools. "The insoluble matter consists mainly of epithelial cells. The clear liquid is water, holding a very small proportion of saline and organic substances in solution."—(*Dr. Wood.*)	"At first, the discharges from the bowels usually consist of a turbid, frothy fluid, mixed with small portions of green bile; or of a nearly colorless water, containing small floculi of mucous." [Are not these epithelial cells?]—(*Dr. Eberle.*)	"Generally, scorbutic persons are inclinable to loose stools, at times, which in all are remarkably fœtid."—(*Lind*, p. 114.)
	"The evacuations are, for the most part, thin and copious, sometimes colorless, but usually tinged green, yellow or brown—and not unfrequently deep green, * * not unfrequently tinged with blood. At an advanced period, they are often copious and dark colored or reddish, like the washings of putrifying flesh."—(*Dr. Wood.*)	"Diarrhœa also, not unfrequently intervenes, with black, or bloody and offensive evacuations. "Serous effusion, also, frequently takes place into the cellular tissue and closed cavities, and is sometimes so copious as to amount to a general dropsy."—(*Wood.*)

PHENOMENA COLLATED—SYMPTOMS, COURSE, ETC., CONTINUED.

CHOLERA.

"Forty-eight hours is the mean duration of the diarrhœa.

"The mean duration of the choleric stage varies from eight to twelve hours.

"After the patient has remained in the collapsed state for a variable period, perhaps for a couple of days, etc.

"The duration of such a febrile stage as we have described, is from a week to ten days, [fourteen days all told.]

"Convalescence is in many cases tedious: * * * * slight irregularities of diet produce relapse—one example after two months; patient had remained feeble."—*(Dr. Brown.)*

The mortality in the different ages and sexes was as follows, in Paris, in 1832:

Under	5 years of age,	24	in	1,000.
5 to 15	"	" 5		"
15 to 30	"	" 10		"
30 to 60	"	" 27		"
60 to 100	"	" 63		"
Men of all ages,	- -	21		"
Women of all ages,		22		"

In the suburbs of Paris, the mortality of women was *one-fifth* greater than of men.—*(Paris Report.)*

Total mortality in New York, from 1832 to 1853 inclusive, 12,044.-*(Semi-Centennial Report.)*

CHOLERA INFANTUM.

"The duration of cholera infantum is exceedingly uncertain. * * It often continues for weeks, or even for months. It is not uncommon for a child to be seized with the disease in June, and continue more or less sick until the following October, or November; and in some few instances, it continues to have diarrhœa the greater part of the winter. The attack is very apt to last two or three weeks, until some change in the weather occurs, or the residence of the child is changed." *(Dr. Meigs.)*

Mortality in Paris, 24 in 1,000.—*(Paris Report.)*

Total mortality in New York in 1849, 926.

Total mortality in New York, in fifty years 13,352.—*(Semi-Centennial Report.)*

SCURVY.

"It has no regular or stated termination. Dr. Willan has found it run on in different cases, from fourteen days to a twelvemonth and upwards."

"It is met with at every period of life, but chiefly affects persons of a weak and delicate habit, often children, principally women.

"If women affected with it be wet-nurses, their infants participate in the disease, from the milk not being sufficiently nutritious."—*(Dr. Good.)*

"No age is exempt from its attack—which, though severest with old people, yet was more incident to those of middle age."—*(Paris Report.)*

Remarks on the course and symptoms.—A momentary comparison of the symptoms reveals that, according to reputable authorities, and, I may add, the general sense of the profession, the pathognomonic symptom of *developed* Cholera is *hemorrhage:* diarrhœa, vomiting, collapse, sudden death, or low, febrile reaction, being resultant phenomena. The *cause* of the hemorrhage is rationally explained in the fragility of the solids, from a want of the elements in the fluids, which M. Broussais affirms constitutes the essential nature of Scurvy—"defect of nutrition," in other words. Who doubts it? Again, the pathognomonic symptom of *developed* Cholera Infantum is *hemorrhage:* the invasion of the disease by watery diarrhœa, then vomiting, collapse, sudden death or febrile effort, too plainly proves the fact to admit of its refutation; and here, again, the whole matter is explained by the latent scorbutic diathesis having been inlaid from "the milk not being sufficiently nutritious," as Dr. Good says, or a "defect of nutrition" from "imperfect assimilation," as M. Broussais declares.

And once more, *hemorrhage* is, and ever has been, so associated with scurvy, that the species, *purpura hemorrhagica*, or land scurvy, has received its specific name from this, the most prominent symptom under a full development of the disease. What more can be said, then, of Cholera and Cholera Infantum than that they are modified forms of *land scurvy?* nothing, it appears to me.

This conclusion, however, may, probably, be opposed by many at first. There are numerous physicians, and some of more than middling pretensions, who take as circumscribed a view of scurvy as they do of a pleurisy. They believe it to be a uniform disease in its characteristics of lingering debility and tumefied gums, and that there is nothing more of it; having derived their only knowledge of it from the meagre descriptions contained in modern standard works on practice. Although they may have practiced medicine twenty, or even forty years, they have never seen a case of scurvy, so they say, and yet have blindly treated numerous cases of it, in nursing women especially—that form of it called "*nursing sore mouth*"—and in their infants also, that form of it called *Cholera Infantum*—many of whom "participate in the disease

from the milk not being sufficiently nutritious." Yet, these *competent judges* hesitate not to decide at once that my views are erroneous! They even *ridicule* the idea that Cholera and Cholera Infantum are of scorbutic character. Nevertheless, I esteem all *such* opposition as negative proof that my views are tenable and true.

The Protean manifestations of scurvy will have to be studied afresh, the old authors revived, and new researches made in the directions I have indicated, by *Commissions*, of physicians distinguished for their high attainments in practical medicine, and my views reported on before the unbelieving Thomases of the profession will be satisfied. The appointment of such commissions by the Academies of Medicine in all countries, I most respectfully solicit. I desire them formally to consider the new views I have offered, and to report on the same. The interests of humanity demand it without delay, the cause of medical science also. If a learned Commission of physicians in London could gravely consider, test, and issue a report on the alleged efficacy of castor oil, as a remedy in Cholera, surely I may hope for the like respect being paid my papers by the Academies and Institutes of Medicine in all countries without further solicitation. There is no government but what is deeply interested in this matter, and no commission, governmental or otherwise, could so far compromise its honor as to report erroneously: any commission must report the truth, or assume the responsibility of casting its decision on the side of error, which would be an unfortunate affair for its members, as truth cannot long lie extinguished.

PHENOMENA COLLATED—ANATOMICAL CHARACTERS.

CHOLERA.	CHOLERA INFANTUM.	SCURVY.
"The venous system is distended, especially the large veins and right side of the heart, which is gorged with a black, viscid, imperfectly coagulated blood. "Almost all parts of the body, the brain and spinal marrow, the substance of the heart, the abdominal viscera, the limbs, even the spongy substance of the bones, exhibit signs of venous injection; and large echymoses are frequently found in all the parenchymatous glands.	"According to Dr. Condie, if death take place early, an unusual paleness of the mucous coat and more or less hepatic congestion are often the only morbid appearances discoverable; but Dr. Hallowell states that there is undue development of the follicles of the stomach and intestines, or of one of those organs, without inflammation of the mucous membrane.	"The most characteristic phenomenon revealed by dissection is the presence of extravasated blood, in a greater or less amount in various parts of the body. The purple spots on the skin are nothing more than so many ecchymoses in its substance.
"The mucous membrane throughout nearly its whole extent, is more or less reddened, and the parieties of the bowels are somewhat thickened by this venous injection. Patches of ecchymoses are also frequent in their coats. In many cases an eruption of minute semi-transparent vessicles has been noticed, very closely arranged, and extending from the duodenum to the illio-cæcal valve, and even into the colon, a mere elevation by a serous fluid of the epithelium.	"At a more advanced stage there is generally some indication of inflammation; the mucous membrane of the stomach and bowels exhibits more or less redness in points and patches, and an increased development of the glandular follicles.	"Similar purple or blackish stains are observed in the mucous and peritonæal coats of the bowels, and the mucous coat is often stained with effused blood.
	"Dr. W. E. Horner found the mucous follicles in great numbers enlarged, and even ulcerated, both in the small and large intestines.	"Clots of extravasated blood or colored fibrin are often found in the cellular tissue, the substance of the muscles between the periostium and bones, and occasionally in the serous cavities.
"The whole alimentary canal is distended with the same whitish liquid of which the evacuations consist, often mixed with a dark reddish or chocolate colored liquid, which probably owes its color to effused blood.	"The gastric mucous membrane is sometimes very soft, so as readily to be scraped off by the nail.	"Coagula of blood or of fibrin are found in the cavities of the heart, and thin liquid blood in the great veins.

PHENOMENA COLLATED—ANATOMICAL CHARACTERS CONTINUED.

CHOLERA.	CHOLERA INFANTUM.	SCURVY.
"The lungs are sometimes edematous.	"Dark livid or purple spots have been observed upon the exterior surface of the stomach and duodenum.	"Serous effusion, transparent or colored with blood, is also found in the cellular tissue, the serous cavities and parenchyma of organs, especially the lungs.
"In death, after reaction, the rice water contents of the bowels give place to bilious and bloody fluids. Instead of the dark shade of venous congestion, there is now the vivid redness of an unequivocal inflammation in the alimentary mucous membrane, which is also sometimes softened or otherwise changed, and the mucous follicles exhibit marks of incipient ulceration.	"The bowels usually contain green yellowish or colorless mucous.	"When not colored by effused blood, the muscles and mucous membranes are pale.
"Lesions in the various nervous centres and their investing membranes, such as might be expected from the symptoms during life, and not unfrequently decided evidences of inflammation of the lungs are observed."—(*Dr. Wood.*)	"In cases which have exhibited hydrocephalic symptoms before death, the brain is either generally or partially softened.	"Though generally free from bloody extravasation, the ventricles of the brain frequently contain considerable quantities of serum."—(*Dr. Wood.*
"In consequence of the intestinal exhalation the mucous membrane swells, and resembles a very fine porous seive. This membrane is tumified, spongy, etc."—(*M. M. Girardin and Gaimard's Report on Cholera in Russia and Prussia; Paris*, 1832; p. 134.)	"Serous effusions in the ventricles or upon the surface, and thickening and opacity of the arachnoid have been observed."—(*Dr. Wood.*)	The minute morbid anatomy of the gastro-intestinal mucous membrane has not been studied in scurvy by modern scrutiny, that I am aware of.

REMARKS ON THE ANATOMICAL CHARACTERS.—It is very apparent, then, from the anatomical characters, that the morbid condition in these supposed three diseases, is essentially the same. The sponginess and fragility of the solids, and the escape from the vessels of the fluids, are the striking characteristics.

CHOLERA.

"The most remarkable and obvious change, is the singular increase of the proportion of the solid matters to the watery portion:

"Mean proportions,	Water, ...	630.0
	Solid Matters,	370.0
		1000.0

"I have not detected any considerable changes in the fibrin, albumen, and coloring matter.

"The relative diminution of the alkaline carbonates is always appreciable, sometimes indeed to such a degree, that they can with difficulty be detected; and since these salts, as well as albumen and extractive matter, which has been compared to osmazone, are found in the stools, we may fairly attribute the increased thickness of the blood to the draining of the serous part by the intestines.

"The fibrinous portion was not fonnd defective."—(*M. De Canu, Medico Chirurg.* Rev., vol. xviii., p. 515.)

CHOLERA INFANTUM.

"I am not aware of there having been any analysis of the blood of infant subjects in cholera.

Healthy Blood,	Water, ...	788.8
	Solid Matters,	. 211.2
		1000.0

—(*Busk.*)

SCURVY.

"Mean proportions,	Water, ...	844.0
	Solid Matters,	156.0
		1000.0

—(*Busk.*)

"In relation to the organic constituents of the blood, it appears from a comparison of the analyses most to be relied on, that upon an average, the proportion of albumen is about as in health; that of fibrin slightly increased, and that of the red corpuscles greatly diminished.

"Some interesting experiments have been made by Dr. Garrod, of London, which direct attention to *potassa* as the ingredient of the blood, a deficiency of which may be the characteristic pathological condition of scurvy.

"Dr. Garrod found that the blood of a scorbutic patient, examined by himself, contained a much smaller proportion of potassa than healthy blood."-(*Dr. Wood.*)

Remarks on the Pathology of the Blood.—The relative diminution, from the normal standard, of the serum to the clot, is then, the most striking fact in regard to the blood in Cholera; and its relative superabundance, the same in scurvy. Now it is plain, that if the hemorrhagic law in scorbutus goes into effect, and the serum leaks through the sieve-like porous membrane of the bowels, the morbid state of the blood will be reduced to that in which it is found in Cholera.

The longer a case of scurvy has run, and the more prostrate the patient, the thinner the blood; the choleric, as well as other scorbutic hemorrhage, is often set up in persons supposed to be well, who have labored but a short time, perhaps, under the scorbutic diathesis: and thus, analyses of the blood in Cholera and scurvy must vary more or less, as the blood will vary in the different stages of the same disease.

The soluble salts of the blood in Cholera are, of course, lessened, being carried off in the serum discharged by stool. They are generally in excess in scurvy, because held in solution in the superabundant serum present; but, according to Simon, the excess is owing to the *detritus* of the solids in the road of excretion, as is also the excess of fibrin—the more rational view. Hence, acids are useful or remedial, from their chemical reactions on the worn out detritus, or basic principles in the blood, as well as by their styptic action on the solids, antiseptic virtues, and power of facilitating the excretion of effete matters by urine, etc.

Whoever, then, can unbiasedly examine the above collated phenomena of the supposed three distinct diseases and not discover the same great, leading pathological condition in all, a dreadful lesion of nutrition, arising from the same general cause, defective alimentation, or assimilation; involving the same classes of subjects, viz: the poorly fed, the fragile, the very young, the very old, the weaker sex, etc.; must be constituted for a keener perception of differences than of analogies; must have a relish for nosology, and a distaste for philosophy; must be a lover of the marvellous, the hypothetical, and the obscure, rather than the plain, rational, and truthful; at least, so it appears to me, for who does not see the great leading feature to be *hemorrhage* in all three of the sup

posed distinct diseases? no matter whether white, red, black, or blue, be the blood that is exhaled or infiltrated. No matter from what tissue it escape, it is, after all, but the sign manual of *scorbutus*. No matter whether vomited, purged, spit, micturated, coughed, sneezed, or otherwise liberated, the principle is the same, the pathology the same. Who does not see the same overwhelming, great, and sudden law of *collapse* claiming Cholera and Cholera Infantum to be, unmistakeably of scorbutic character? Who does not see the solids vanishing into thin air; the softening and disintegration of all the tissues; the ramollissement of the brain; the sponginess and porosity of the mucous membranes, and consequent leakage; the same of the dermoid tissues, and consequent petechial ecchymoses; the same softening of, and infiltration in, parenchymatous structures—in a word, the impoverished blood, and the all but sphacelating solids; with such feeble reaction as the starved powers of life are able to manifest? And who so blind as not to see that, the acids which congulate albumen, harden the tissues, and by their chemical reactions promote excretion, are the rational therapeutic remedies, aided by tonics, astringents, vinous stimulants, and the concentrated elements of a wholesome nutrition?

EVIDENCES DERIVED FROM THERAPEUTICS.

The evidences derived from the administration of remedies are numerous. They might be made to embrace a lengthy analysis of cases, running through a series of twenty years; but as this essay is already extended to a greater length than was designed in the outset, and more especially as I dislike to detail cases, possessing as they do generally, much similarity, I will but succinctly elaborate this head, barely sufficient to show with clearness the testimony derived from treatment of the correctness of the great truths I have enunciated. Happily, I will be greatly aided in this branch of my subject by second testimony, drawn from the cases of British practitioners, which will have more weight than self-attested cases; still, I will present a few cases of my own as types, and give an outline of the treatment that has proved successful

in scores of others, if not hundreds, all told, of all degrees and shades of ailment in the same category.

It matters not to me whether a condition of system pathologically calling for medical aid manifests itself by symptoms called cholera, cholera infantum, or puerperal anæmia, or hydrocephalus, or any other name derived from the most striking or prominent symptoms present; so that upon a careful review of all the circumstances attendant upon the history and aspects of the case, I judge defective alimentation to lie at the bottom of it, or want of power of assimulation, and hence impaired nutrition; or if I discover the system is robbed of nutrition from nursing or diarrhœa, or other exhausting discharges, I hesitate not to consider it a case involving a scorbutic condition of the system or a lesion of nutrition, and treat it accordingly: and the successful results that have attended this practice through a long series of years, particularly in that form of disease called in this country the nursing sore mouth, or puerperal anæmia, which I have elsewhere shown to be Scurvy not recognised, and in the infants participating in this disease from the milk not being sufficiently nutritious, the affection in them taking on the form of cholera infantum—the successful results, I say, of twenty years' practice in the treatment of a goodly number of such cases with anti-scorbutics, as lemonade, orangeade, vinegarade, punch, vegetable food and fruits, beef-steak gravy with currant jelly, nutritious soups, highly nutritious cow's milk, etc., settles the matter in my mind; with me it is knowledge gained by experience, that Cholera Infantum is Infantile Scurvy, however unable I may be to impress this knowledge or conviction on others.

The medical mind of the age, I fear, is too intent on particularizing or studying secondary lesions and trifling differences in symptoms—splitting hairs and classifying the fragments—or too little disposed to generalize by ascending to the primary pathological condition in the diagnosis of disease. The practitioner, in a malarious district, so called, is forced into generalization, for he finds himself unable to cure maladies, both local and constitutional, with the ordinary or routine remedies. The opthalmias, the diarrhœas, the cholera mor-

buses, the rheumatisms, the gastralgias, the dysenteries, the ulcers, the neuralgias, the puerperal fevers, even, and many other forms of disease that could be mentioned, only yield to the great and unaccountable influence of quinine. He is mostly self-taught in this school of experience, however. To be sure he has heard of *masked agues*, but he always supposed there were some features uncovered, some trace of the form, shape or outline of an ague to be seen, by which he would know it to be a masked ague. But no, he only learns to suspect the difficulty when the commonly used medicines fail, and only finds it out *positively* by the proofs of treatment, the successful administration of quinine.

Just so it is in scorbutus; and as a writer on scurvy, whose views are given by Lind, observes, it comes in all manner of forms—such as, "a looseness or costiveness of the belly—a bastard dysentery, the blood unmixed with the fœces—fainting fits—difficulty of breathing—a bastard pleurisy—atrophy —erysipelas—pestilential fevers—intermittent fevers—madness—a profound sleeping—a salivation—a languor without any evident cause—copious sweats—a tossing or concussion of the limbs, being a mixture of a paralytic and convulsive disorder;" or, as described in Lord Anson's Reports: "this disease is surely the most singular and unaccountable of any that affects the human body. Its symptoms are inconstant and innumerable, and its progress and effects extremely irregular; for scarcely any two persons have the same complaints, and when there hath been found some conformity in the symptoms, the order of their appearance hath been totally different. It frequently puts on the form of many other diseases. * * * It is not easy to complete the long roll of the various concomitants of this disease; for it often produced *putrid fevers*, pleurisies, the jaundice, and violent rheumatic pains." And the proof of this is, that nothing but anti-scorbutic treatment will cure.

I have somewhere seen it stated by a respectable medical writer, that a case of scurvy fell under Dr. Elliottson's care, where a former attendant had extracted several of the patient's teeth, and a still more distinguished practitioner had pronounced it a case of *fungous hematodes* of the gums! and

I have verily seen a whole medical society of respectable, if not extraordinary attainments, nonplussed and divided in sentiment as to the cause of death of an esteemed medical brother, who had died by inches with an anomalous disease that I should have called scurvy, all having been anxious bed-side observers, and the post-mortem appearances carefully reported—some said typhus fever, some one thing, and some another, but no one, however, hinted that it was scurvy.

The view taken by some that Cholera Infantum is a malarious disease, shows a leaning towards generalization to be sure, yet unfortunately it throws the etiology upon the baseless fabric of an hypothesis; but if intermittent fever is one form of scorbutus, as above quoted from an old writer in Lind, (which I neither affirm nor deny) a ready explanation is found of the methodus medendi of quinine and all that class of vegetable alkaloids, and their salts—they act antiscorbutically: just as potash and soda and their salts act, and other vegetable organic principles, acids, etc., quinine being captain of the host.—They restore lost elements to the blood, and by their chemical reactions and impressions on the nervous system facilitate the excretion of effete matters by the kidnies, skin, etc.

Case 1.—A young mother laboring under the nursing sore mouth, *alias* land scurvy, having an infant some five or six months old laboring under Cholera Infantum, fell under my care in December last, (1854) after a summer of uncommon heat and drought, a general blight in vegetation, and an unusual scarcity of vegetables and fruits, the stinted supply commanding the most exorbitant prices, quite beyond the reach of the poor. The family was so destitute that when I was called it was supported wholly by charity. The heads of the family were foreigners. The father could get no work, and the starved mother was exhausted by diarrhœa and bloody flux, which had alternately held her since July, soon after the birth of the starveling infant that had now exhausted the last drops from her withered breasts—lactation was totally suppressed. The mother was considered at death's door, and had received the last sacraments of the church preparatory to her dissolution, the day I was requested for God's sake to

attend to her and the miserable specimen of humanity in the shape of the infant.

The symptoms of both mother and child, so nearly coincided in all essential particulars, that a description of the phenomena in one will answer nearly equally well for the other. Vomiting more or less every day in the mother's case—this symptom had now subsided in the child—purging in both to the number of eight or ten evacuations a day—exhaustation—palor—cool, corrugated, skin in both, with numerous inflamed patches and papilla in the infant—feeble remittent reaction in the infant, intermittent and of the tertian type in the mother—hyperæmia of the gums, fauces, and arches of the palate especially, with ulcerations of portions or patches of the buccal mucous surfaces—mouths moist, even to profuse salivation in the mother—tongues red and sore at the tips, and the mother's very sore, aphthous, and chopped along its edges—piles and prolapsus ani in mother, excoriated anus in the infant—dreadful bearing down and painful condition referred to the womb, in the mother—great and overwhelming epigastric distress in the mother—fainting even to swooning in the mother, on several occasions—pain and dreadfully distressing noises in the head in the mother—lethargic dullness and sleepiness amounting to sub-coma in both—great emaciation in both, but more remarkable in the mother—a few petechiæ of the ecchymosed kind on the limbs and back of the mother, and large ecchymoses on the sacrum, none of this kind of petechiæ, or spots of purpura, on the infant, but hundreds of papillated or urticated petechiæ, that is, a kind of nettle-rash or blotchy eruption resembling musquito bites, popularly called "hives," and characterized by intolerable itching. Successive crops of these wheals surrounded by a crimson efflorescence, having their itching period of a day or two, then declining and giving place to another crop somewhere else, are among the most common phenomena of Cholera Infantum, and yet this eruption has not generally been noticed or spoken of by authors; only the lenticular petechiæ or dermoid ecchymoses that precede death. The dejections of both mother and infant varied, being sometimes yeasty, at other times watery and greenish, or pasty and chocolate colored, and *ex-*

tremely fœtid, as all authors agree is ever the case in Cholera Infantum; and Lind says, "scorbutic persons are inclinable to loose stools, which in all are *remarkably* fœtid." Appetite remaining in both mother and infant, without the power of digestion; even boiled milk would pass the bowels in a half curdled state in the infant, and yeasty and foaming in the mother's case.

Now the indications in these cases appeared to me to be the same, for I could really trace no difference in the true cause and essential nature of those ailments. Partial starvation was evidently the primary or remote cause, a want of the elements of nutrition, and a collapse of the powers of life was the consequence. The symptoms were but so many voices declaring this, declaring the difficulty to be scorbutus. The scorbutic type of fever, the scorbutic fœtid diarrhæa, the scorbutic tendency to disintegration of the tissues, the scorbutic appetite; and the objective signs but echoed these wailings. The palor of countenance, the great emaciation. hyperæmia of the tissues of the mouth, the urticated crimson efflorescence, petechiæ, and ecchymoses of the skin, all spoke the same language; there was no confusion of tongues. The indications therefore, I say were plain, viz.; to quiet the irritability of the stomach and bowels. and supply wholesome nutrition, together with suitable tonics and stimulants to aid digestion and assimilation. Dr. Rush, and other authors speak of this condition in Cholera Infantum—appetite with but the feeblest powers of digestion, which should be expected in a starved scorbutic condition of the system. Dr. Rush, and others too, have not only recorded the natural pantomime of this condition in Cholera Infantum, cravings for food, even solid hearty food, and gravies of the richest quality and highest flavor: but they have also left the record that a reasonable indulgence or gratification of these longings was not detrimental, not injurious, but seemed to favor recovery. [See what this celebrated writer says, in his medical Inquiries, Vol. I. p. 156.] What proofs could be adduced more emphatically corroborating my views of the scorbutic nature of the disease? I have already spoken of the natural pantomime cravings for fruits evinced by infants, and which all practitioners—without much

philosophical reflection I must conclude—assume must not be indulged in Cholera Infantum, must not be gratified in any stage of the affection. How unnatural! My own convictions are, that if all breeding and nursing women could have plenty and variety of good animal and vegetable food; were enjoined to indulge in the free use of oranges, lemons, apples, and all kinds of fruits, jellies, pickles and salads; and infants at the breast were allowed, in addition to the rich vegetable milk emulsion which such a dietary on the part of the mothers would afford them, to suck oranges and roasted apples, and to have lemonade, vinegarade, etc., as freely as their panto mime inclinations seem to demand, and this course adopted early and persisted in through infancy and early childhood, Cholera Infantum would be nearly banished from the catalogue of human diseases.

Conversing on this subject the other day, with a prominent physician of this city, he observed in confirmation of my views; that he had known an instance of a child being cured of Cholera Infantum by eating freely of ripe currants. Blackberry jelly and cordial are popular remedies. The difficulty lies in the too great abstinence, either from necessity, as after blights, or by medical direction, for a long time, as through the winter and spring; under which circumstances a free indulgence on the summer opening, might prove mischievous. Lind says, that "summer vegetables and fruits, generally upon first using, open the bowels, promote urine plentifully, and restore perspiration; but if voraciously eat, induce a dangerous flux of the belly;" and that, "after a long abstinence from greens and fruits, scorbutic persons should be treated like one almost starved to death; that is, not permitted for a few days to eat voraciously, or surfeit themselves with them: otherwise they are apt to fall into a dysentery which often proves mortal." The popular belief, therefore, that summer vegetables and fruits induce Cholera and Cholera Infantum, and also the injunctions of physicians to abstain from their use, is founded partly in truth; but the *main* truth in the argument, that which gives it all its force, the scorbutic predisposition of the system, is left out of the proposition. In infancy and childhood, during the most rapid growth, there is the

greatest need of all the salts of the mineral bases that enter into the fabric of the human system, such as lime for the bones, potash for the muscles, etc., etc., etc., of which I have sufficiently spoken, and which are *only* elaborated in the juices of vegetables and fruits, and the *want* of which is probably the cause of the pantomime longings and cravings for fruits in Cholera Infantum. The same pantomime longings and cravings exist in Scorbutus, proving the identity of the supposed two affections: the true pathology, most probably, is the want of fresh supplies of all the organic salts of the blood. The blood thirsty carniverous animal protects itself from Scurvy by the salts in the blood of its victims, while the herbiverous animals are protected through the salts in vegetation, and omniverous man has both sources before him. The natural pantomime of the blood-thirsty carniverous animal, that often kills only to suck the blood, proves this view. But to return from this digression.

Fortunately this poor, distressed family was under the care of the Benevolent Relief Society, and whatever was ordered by me was supplied. I prescribed for both mother and infant as follows:

℞. Tr. Rhei Comp.,
Tr. Catechui,
Mucilage Acaciæ,
Syr. Simpl. ā ā ℥i.
Morph. Acetat. grj.
Sodæ Bicarb.,
Ammon. Carb., ā ā ℈j. M.

Of this mixture the mother was ordered a teaspoonful, in a small draught of good brandy toddy, every three hours; and the infant forty drops, in a teaspoonful or two of the same, at the same intervals. I have found this mixture to answer the purpose of quieting the irritability of the stomach and bowels, arresting vomiting and purging, and correcting the green and fœtid passages in so many cases, that I often rest the fulfilment of the first indication on its administration alone, in Cholera Infantum; particularly when the infant is still at the breast, and I can thus be sure of conveying lemon juice and other anti-scorbutics, to the little sufferer, through

the medium of its mother's milk, by enjoining upon her an ample anti-scorbutic dietary, and strengthening her digestion with quinine and good punch daily. This mixture is well adapted to the therapeutics of infants and children, in not being repulsive to the taste, but, on the contrary, agreeable; they universally like its flavor, and not unfrequently cry for more, after quaffing each dose.

The dose and intervals of its administration are, of course, to be regulated by the urgency of the symptoms, bearing in mind that there is one fourth of a grain of morphine in every ounce, and that while vomiting is present, there is but imperfect absorption. To adults, I have frequently given half an ounce, in an ounce of toddy or sweetened water, and repeated it after each recurrence of vomiting, till the four ounces were taken, and that in the space of an hour; and have had the happiness, generally, of seeing it succeed in perfectly overcoming the irritability of the stomach and bowels. For infants and children, from twenty or thirty to fifty or sixty drops, and even to a teaspoonful, according to age, sufficiently diluted with sweetened water, repeated in like manner in urgent cases, is the preferable mode of administration. In protracted cases, a suitable dose, according to age, every three or four hours, so as to keep up a constant impression of this quieting, astringent, and stimulating anti-scorbutic mixture, is the best mode of administration, and seldom fails to overcome the irritability of the stomach and control the diarrhœa, in two or three days at farthest. In addition to the above prescription, I made the following:

℞ Pulv. Acid. Citric. ℥j.
Quiniæ Disulph. gr. xvi.
Morphiæ Sulph. gr. ij.
Spit. Vin. Gall. opt. Oij. M

Of this mixture the mother was ordered a table-spoonful, in two or three table-spoonfuls of hot water, sweetened generously with loaf sugar, three times a day, at noon, at evening, and at bed-time. The stomach is in general too sensitive to the impression of stimulants in the morning. The infant was ordered a small tea-spoonful prepared in the same manner, sufficiently diluted with hot water sweetened, and to be taken

at the same intervals and hours of the day. The indications to be fulfilled by this are obvious.

The mother was ordered the best of fresh beef, and potato soup well seasoned with table salt and Cayenne pepper, and of good wheat bread, toasted and crumbed in, a little; also as an alternating dish, choice Irish potatoes, boiled, mashed in the pot, and well seasoned, to be eaten in boiled milk as spoon victuals. This dietary to be but sparingly partaken of at first, treating the patient in this respect as a starveling should be treated.

The infant was ordered to be provided with a bottle and India-rubber nipple, and the undiluted milk of a fresh young cow, this to be boiled and suitably sweetened with loaf sugar, and five grains of bicarbonate of soda to be added to each pint. Of this the infant was to partake sparingly at first, and the allowance increased as the stomach should be found able to appropriate it.

In three days' time the irritability of the stomach and bowels was mostly overcome in both, and before the end of the week, the alvine discharges were nearly natural, and both mother and infant were able to digest at least half rations. At the end of three weeks both were not merely convalescent, but I may say well, and rapidly improving in flesh.

I should have mentioned that the mother was supposed by the benevolent ladies to be in the last stage of consumption, owing to a distressing cough, difficulty of breathing, pains in the chest, and abundant expectoration, which seemed to them to constitute the most formidable ailment in the case.

With regard to the use of brandy as a remedy in this affection, (made the menstruum in the foregoing prescription,) I deem it not only admissable in all stages of the disease, but very remedial and salutary in its operation. Its power to harden delicate tissues and restrain excretion is familiar to all, as well as its cardiaco-vascular power, and it affords a resource and a reliance, therefore, of vast importance in urgent cases, unfavorable changes and relapses. On the second day of my attendance on the above cases, the mother had a sinking, fainting, or swooning fit, it being the day of apyrexia in her

case, and I gave her during the day, with the happiest effects, half-a-pint of the best brandy. A salutary perspiration ensued that night, and an evident mitigation of all the urgent symptoms. Champaigne wine is an excellent adjuvant remedy, and may be allowed infants freely. Soda powders are very remedial, and particularly grateful, or what is of easier administration to infants, small vials of fountain soda water, with a grain of bicarbonate of soda to the ounce added, and kept cold with ice. they will often quaff it from the vial. The happy effect of carbonic acid on morbidly sentient mucous surfaces is well known.

Case 2.—The history of this case discloses the condition of another family that fell under my care in August last, (1854,) a native family, and in the higher walks of life—a rather wealthy family. The mother was a pale lady, aet. about 38, constitutionally enfeebled by breeding, and care-worn during the hot summer from unceasing devotion to her sick infant, and the melancholy fact that the father was becoming insane! Pale and haggard and wholly incapacitated for business, and laboring under a melancholy madness, he was despatched to an insane asylum, early in August. The infant at the breast, some nine or ten months old, had Cholera Infantum in an aggravated form, then in the chronic stage, or of six weeks standing, and besides the incessant wearing affection of the bowels, its head and shrunk neck were covered with a sheet of angry indolent biles, neither disposed to suppurate nor to heal. At length convulsions set in, when my medical attendance in the family commenced, though I had been an observer of the family's condition for weeks before.

The infant was lying on its mother's lap, pale as a corpse, nearly pulseless, the extremities becoming cold, the discharges from the bowels copious, watery and fœtid, and vomiting and convulsions had supervened—a sudden relapse. I ordered artificial heat to the surface, and gave the infant, instanter, liberally of brandy toddy; dispatched a messenger with a prescription for the rhubarb mixture, and ordered half-a-teaspoonful to be given after each recurrence of vomiting, and when that should cease, at intervals of three hours. The

vomiting soon ceased, the convulsions did not recur, and before evening, (this was in the early part of the day,) the diarrhœa was greatly controlled, and the aspects of the case were altogether changed for the better.

I then directed my attention to what I considered the root of the difficulty, the condition and dietary of the mother. She was evidently laboring under Puerperal Anæmia, or the Nursing Sore Mouth; her milk had nearly failed, and the infant was in that critical state, through the hot months, that often obtains, holding on to a diseased mother's scanty supply, alternated with the arrowroots and other feculas so much in vogue, but which are wholly destitute of those succulent principles and soluble salts the blood needs. The mother was ordered a very nutritious diet, the best meats and vegetables the markets afforded, together with brandy punch and lemonade, as much as she could manage; especially she was enjoined not to stint herself in the use of brandy and lemons. She religiously followed directions, and in twenty-four hours the breasts responded with sensibly increased supplies of milk. In a week she had comparatively a flowing breast, began to regain her strength and color; and the infant immediately responded to this improved quality of its supplies; the diarrhœa soon ceased entirely; the biles began to fade away, and in ten days had disappeared altogether; and the infant rapidly regained its health without the administration of any other medicine than the rhubarb mixture; under precisely the same circumstances of heat, habitation, etc., it had sickened—without country air or going to the sea-shore. I should have observed that the infant was under the administration of blue pill, etc., when I was called in, which of course was discontinued, mercury, in my judgment, being generally contra indicated in this affection, certainly in the protracted stage of it. Concentrated nutrition is then imperiously demanded, and I have found roast beef gravy and currant jelly much more salutary. Kramer says, "The Scurvy is the most loathsome disease in nature, for which no cure is to be found in your medicine chest; beware of bleeding, *shun mercury*, but if you can get green vegetables, if you have oranges, lemons, or their pulp or juice preserved with sugar, so that you can make a lemon-

ade, or rather give to the quantity of three or four ounces of their juice in whey, you will, without other assistance cure this dreadful evil." It has been urged against the scorbutic theory of Cholera that calomel is efficacious in this disease, but pernicious in Scurvy. Now it may be a good cholagogue purge in the first stage, when there is portal congestion, and a very injudicious drug in the latter stage, under prostration and ulceration; though the immediate good effect claimed, of large doses of calomel, seems more satisfactorily explained by the stypticity of the chloride, and its mechanical obstruction to the oozing capillaries; just as we see its desicant effects in excoriations. It is not a quick purge, and if the good effect, the unloading of the portal system, were the mode of explaining the good operation of calomel, as we empty the uterus to arrest hemorrhage of that organ, castor oil would be the preferable purge. I have found a purge of calomel or blue pill an excellent first remedy in acute attacks of scurvy with great epigastric fullness and distress, and I have treated the same condition with cream of tartar and sulphur, with equally happy effects. Admitting the good effect of calomel in Cholera and Cholera Infantum then, does not militate against my views at all.

But the chapter of accidents is not yet fully told, pertaining to the history of this case. A brother of the infant, some fifteen years old, during the week I was in attendance, was taken suddenly one hot night, on retiring to bed, with an alarming hemorrhage from the lungs! He was thought to be in good health, no consumptive ailment had ever affected either branch of the family ancestry; he had no cough, save that caused by the hemorrhage; had suffered several attacks, however, of epistaxis, during the summer.

I regarded this case as strictly a scorbutic hemorrhage, and treated it accordingly, with rest, cream of tartar with a little powdered jalap, formed into an electuary, with lemon syrup as a purgative; lemonade as a drink; and potatoes and milk, and soups, as a dietary, with a free allowance of fruits. The hemorrhage recurred several times in the course of a week, and a pint of blood, perhaps, was coughed up in all. After the system became well saturated with succulent vegetable

nutrition, there was no more hemorrhage, and no indisposition or bronchial difficulty was left, or has since supervened to this time, April, 1855. The only objective signs of Scorbutus, to be seen in this patient, were paleness of countenance and hyperæmia of the arches of the palate.

The above described infant's case illustrates the whole matter of Cholera Infantum, stomach, bowels, and brain, and also the rational treatment. It also illustrates its etiology. A mother worn down with domestic devotions—a model of a mother as ever I saw, in all the self-sacrificing duties to her offspring: a father whose sole object was business at the desk for twenty years; both were attenuated and enfeebled; and here was an offspring, begotten, bred, born, and nourished from the breast under these untoward circumstances, during a year of intense heat, drought, blight, and scarcity; and the cholera either fully epidemic or sub-epidemic in nearly every city in the Union.

One item more in the premises remains to be chronicled. Late in October, or about the first of November, the father returned to the bosom of his family, with the "*mens sana in corpore sano*," weighing some twenty pounds more than when he left home; evidencing the effect of change in his dietary, change of air, change of scene, change of everything, on a habit enfeebled by confinement to business; and found wife so plump that she might be considered rejuvenated; infant daughter so fat that her skin could hardly hold her, weighing all but double what she did in August; and son sound, active, and rejoicing in his strength.

Case 3.—In July last (1854,) Mrs. G——— was brought to bed under my attendance; and after all was over, and she was changed and comfortably disposed of in a clean bed, she took on a sinking fit, from which she seemed not likely to recover—not exactly fainting or syncope, for it was attended with consciousness and universal distress, moaning, jactitation and cramps. Brandy, laudanum, smelling salts, aspersion, rubbing, a rapid appliance of restoratives finally brought her out of the collapsing fit; the cause of which was revealed by the prominently objective signs of Scorbutus discoverable in the mouth. The like phenomenon after delivery was familiar

to me, having seen it result in death in sundry instances. I visited her the next day, and left directions for her to have wine, and good support by way of food. I called again on the fourth day, and arrived just after she had sunk into another collapsing fit of great distress and imminent peril—caused by a dose of castor oil she had taken of her own accord the evening before, following the pernicious custom she had been advised to pursue by her medical attendant in her previous accouchments. It had operated three times, and the shock had nearly killed her. Restoratives again brought her through. She was a delicate, feeble woman, and her husband a pale in-doors worker, a gunsmith. The children all bore the marks of their feeble parentage. The next older child than the infant just born—a little boy twenty months old—was laboring under a prolonged drag of Cholera Infantum, of more than a year's duration, from which he had only been respited a month or two during the previous winter season.

The diarrhœa was becoming more and more aggravated, and the little fellow was nearly thrown off his feet. He could totter about a while, but had to lie most of the time—five or six, some days eight or ten passages, of the peculiarly fœtid, watery kind—constant thirst—vomiting frequent—cutting the molar and bicuspid teeth—hungry as a bear all the time, and the food passed undigested—irregular fever—luxuriant crops of urticated, itching petechiæ, with crimson areolas on the skin—tumid, tympanitic abdomen—prolapsus ani—pallid countenance—hyperæmia of the gums and all the linings of the mouth and fauces—the gums tumefied, in fact, and when pressed with the finger the returning blush was instantaneous—constant drivelling—emaciation not so remarkable as I would have expected from the mother's history of the case.

This child was treated with half-teaspoonful doses of the rhubarb mixture before spoken of, every four or six hours, given in good brandy toddy; lemonade, alternated with a weak solution of bicarbonate of soda, ad libitum, as the thirst demanded; and boiled milk and mashed potatoes, alternated with light bread as a dietary. Under this course and regimen,

the little fellow got on as if by magic, without any mercurials to "regulate the secretions," at all. The diarrhœa at once began to abate; the thirst to be diminished; the food to be digested; the strength restored: and in two weeks the child was well—the scorbutic redness of the gums and slavering were nearly removed. The child was ordered roasted apples, tomatoes, stewed cherries, currants, etc., etc., freely, every day, and every meal, and if diarrhœa ensued, the "red drops" to be given in brandy toddy, the amount of food diminished, and the soda and acid drinks resumed. There was no relapse; the gums became quite healthy-looking and natural, before any more teeth cut through, nor did I lance them in their swollen condition, as was my practice formerly. Now if any medical mind can see aught but Scurvy in the above assemblage of symptoms and physical signs, or if any one can deduce any other pathological condition from the effect of the remedies used, such mind has penetration beyond mine, and can make deductions, that are beyond my ken or ingenuity; and if any one living, or the shade of Rush departed, will point out to me, my error in diagnosis, if the case was not one of Cholera Infantum, I will acknowledge my stupidity, and enter myself a pupil under his clinical instruction.

Case 4.—During the series of disastrous, blighting, sickly years, 1845–'46 and '47, before spoken of, it fell to my lot to attend a good many cases of Cholera Infantum, in the city of Chicago, where I was then practicing. I select from my case-book one only as a type, for it would be tiresome to report them all; and I select this, because it illustrates the comatose condition of the last stage of the affection, and the power of remedies over that condition, together with collateral evidences of the scorbutic nature of the malady, better and more clearly, perhaps, than any other one on my list. The case occurred in the hot summer of 1846. The child was in its third year, a little over two years old, a sprightly little girl, of native-born parents: but the mother was a victim of the Nursing Sore Mouth, and the father shiftless and slothful. They were poor, but the mother possessed what the father lacked, industry and good management, and so kept her five or six little ones neat and tidy; and really they

looked better kept than they were—they were better clothed than fed, I think, for I lay much to the charge of defective alimentation.

I will run over the evils that fell upon that family that year. The mother had the Nursing Sore Mouth, and the infant at the breast, some seven or eight months old, participated in the affection, and had a chronic fœtid diarrhœa. It was habitual with the mother; the disease had occurred in each of her three last pregnancies. The father grew more and more lazy and slothful, till about November, when he parted from his family, went home to his mother, and took to his bed with Scurvy; had an abcess in the calf of his leg, that laid him up more than a year. The child next older than the infant is the case here related. The child next older, a little girl between four and five, was attacked in October with the hip disease, and lingered and died about a twelvemonth thereafter. The two older boys got on without any serious attack. The mother recovered under anti-scorbutic treatment, and the infant at the breast sucked itself well, by reason of the punch and lemonade the mother took.

In September, the subject of this was attacked with an exhausting diarrhœa, of two days standing, that had completely prostrated her, before I saw the case. Vomiting had supervened, and there was a strong tendency toward collapse and death, with all the concomitant symptoms seen in very urgent cases. Excessive thirst was present, and I ordered instanter a dozen of two ounce vials of fountain soda water, with three grains of bicarbonate of soda dissolved in each, and the vials kept cool with ice. Also, the rhubarb mixture before spoken of; and under the administration of these remedies, the vomiting ceased, but the diarrhœa was only partially controlled—at times, there was much tenesmus and straining, and blood was discharged at the close of the evacuations, showing that the lower portion of the intestinal canal was much implicated. The stools were intolerably fœtid. Small powders of calomel and Dover's powder were prescribed, in addition to the above remedies, and the case ran on for a week without much change in the symptoms, the child taking but little nutriment, and having from half a

dozen to a dozen green, fœtid, watery, bloody stools, daily—tenesmus characterizing the close of each evacuation. Great feebleness, emaciation, and tendency to death marked the case. The powders were discontinued, and the rhubarb mixture relied on, with the lemonade and punch drinks the mother was using, and which the child evinced a liking for, when it refused all other drinks. This treatment, together with starch and laudanum injections, restrained the dejections to three or four only a day, but somnolency ensued, which at length amounted to complete coma, from which the child could not be roused. The child continued in this way two or three days, taking nothing by the mouth, and lying with its eyes half closed, the balls rolled up, and the mouth kept moist only by swabbing. Injections now constituted the only treatment. The most nutritious soups—a piece of beef or chicken, and a potato, boiled together and the broth seasoned with a little salt, Cayenne pepper and lemon juice, were used. A half pint of this soup, with nearly a teaspoonful of the rhubarb mixture, constituted each injection. The bowels became less and less irritable under their administration, and on the third day after coma set in, the child awoke to consciousness and eagerly quaffed lemonade and punch from the spoon. Under an ad libitum use of punch, lemonade, soup, boiled milk and bread, and enough of the rhubarb mixture to quiet irritability, the child got well. The proof of the efficacy of anti-scorbutic treatment, together with the natural pantomime of the infant, and also the purplish-red appearance of the tissues of the mouth, gums, and prolapsed anus, satisfied me that Scorbutus was an element in the pathology of this case--Cholera Infantum aggravated, as I then supposed, by the scorbutic diathesis. Collateral proofs are seen in the mother's condition, the infant at the breast, the older girl with coxalgia ending in caries of the hip joint, and the father with a twelvemonth siege of swelled legs and abcess of the gastrochnemii muscles. I did not attend him, for after leaving his family he called another physician, but I saw him of curiosity on several occasions, and satisfied myself of the nature of his ailment.

These cases will suffice as types of Cholera Infantum, and

are selected because they forcibly illustrate its identity with Scorbutus. Were it necessary to the argument, I could adduce many more, and some, perhaps, even more hopeless in aspect, the subjects lying insensible for two or three days, with scores of flies busy on the glazed eyeballs, cured by a similar anti-scorbutic treatment, the remedies and nutrition administered per anum with the syringe. During a period of twenty-years, since 1835, I have considered and treated many cases of this character as Scorbutus, in infants. Knowing the Nursing Sore Mouth to be Land Scurvy in mothers, and seeing many infants participate in the disease with fœtid diarrhœa and watery gripes, I have never been deceived since the year above mentioned, 1835, (a most remarkable year, in the Western States, for scarcity and sickness,) *where the mother has been affected;* yet I candidly confess that, where the mother of an infant laboring under Cholera Infantum has deported herself apparently well, or in pretty good health, I have been deceived, and have treated such cases empirically, as best I could, with powders of hydrarg. cum creta, ipecacuanha, etc., on the anti-phlogistic and alterative plan; but from observation, I have become more consistent in my practice, of late years, and now ascribe all cases of Cholera Infantum to the same cause, defective alimentation or impaired nutrition; and instead of particularizing one set of cases, the infants of mothers affected with Nursing Sore Mouth, as Scurvy in infants, and other cases as Cholera Infantum, I generalize the whole genus as *Infantile Scorbutus*, and frequently institute no treatment whatever to the infants, except the rhubarb mixture, only put the mothers on a judicious course of tonics, egg-knogg, milk-punch, lemonade, and a generous diet of good meats, fresh vegetables and fruits, and the nurslings are sure to come right.

CORROBORATIVE VIEWS OF BRITISH PRACTITIONERS.

I will now, by quotations, illustrate the exhaustion, and the head symptoms—the scorbutic coma, arising from inanition, that is so generally seen in the last stage of Cholera Infantum.

"I believe," says Solly, in his able work on the human brain, page 281, "that there are two forms of hydrocephalus, the one anæmic, the other inflammatory, as well as two forms of ramollissement. Dr. Marshall Hall was one of the first to point out the resemblance which exists between a comatose condition arising from exhaustion, and that which is occasioned by the inflammation and effusion. The affection which Dr. Hall described, arises *principally in infants*, but is not confined to them. He calls it 'an hydrencephaloid affection of infants, arising from exhaustion.'

"Dr. Hall has observed this affection generally as a consequence of *continued diarrhœa*, produced either by *bad diet*, or long continued use of purgative medicines, or as a consequence of blood-letting. He divides the affection into two stages, 'the first that of *irritability;* the second that of *torpor;* in the former there appears to be a *feeble attempt at reaction*, in the latter the nervous powers appear to be more prostrate.' He thus describes the signs of the complaint: 'The infant becomes irritable, restless and *feverish*, the face flushed, the surface hot, and the *pulse frequent;* there is an undue sensitiveness of the nerves, and the little patient starts on being touched, or from any sudden noise; there are sighing, moaning during sleep, and screaming; the *bowels are flatulent and loose*, and the evacuations are mucous and disordered. If through an erroneous notion as to the nature of this affection *nourishment and cordials be not given;* or, if the *diarrhœa* continue, either spontaneously or from the administration of medicine, the *exhaustion* which ensues is apt to lead to a very different train of symptoms. The *countenance becomes pale*, and the *cheeks cool or cold;* the *eyelids are half closed*, the *eyes are fixed*, unattracted by any object placed before them, the pupils unmoved on the approach of light; the breathing, from being quick, becomes irregular, and affected by sighs; the *voice becomes husky;* and there is sometimes a husky, teazing cough: eventually the strength of the little patient has been subdued, and the vascular system exhausted, by abstraction of blood.'"

In the above paragraph, I have italicised some of the leading phenomena in Dr. Hall's "hydrencephaloid affection of in-

fants," making its striking conformity to Cholera Infantum or the scorbutic malady as manifested in infancy, according to my observations.

"Dr. Hall considers that this affection is to be distinguished from true hydrocephalus principally 'by observing the condition of the countenance, and by tracing the history and causes of the affection.'

"Dr. Abercrombie observes: 'In the last stages of diseases of exaustion, patients frequently fall into a state resembling coma, a considerable time before death, and while the pulse can still be felt distinctly. I have many times seen children lie for a day or two in this kind of stupor, and recover under the use of wine and nourishment. It is often scarcely to be distinguished from the coma which accompanies diseases of the brain. It attacks them after some continuance of exhausting diseases, such as tedious or neglected diarrhœa, and the patients lie in a state of insensibility, the pupils dilated, the eyes open and insensible, the face pale and the pulse feeble. It may continue for a day or two, and terminate favorably, or it may prove fatal. This affection seems to correspond with the apoplexia ex inanitione of the older writers. It differs from syncope, by coming on gradually and in continuing a considerable time, perhaps a day or two; and it is not, like syncope, induced by sudden and temporary causes, but by causes of gradual exhaustion going on for a considerable time. It differs from mere exhaustion in the complete abolition of sense and motion while the pulse can be felt distinctly, and is in some cases of considerable strength. I have seen in adults the same affection, though perhaps it is more uncommon than in children.'

"In a letter which Dr. Hall received from Dr. Abercrombie, that gentleman observes:—'The state of infants which I have referred to is a state of pure coma, scarcely distinguishable at first sight from the perfect stupor of the very last stage of hydrocephalus, the child lying with the eyes open or half open, the pupils dilated, the face pale. It is difficult to describe distinctly the appearance, but it is one which conveys the expression of coma rather than sinking; and I remember the first time I met with the affection, the

circumstance which arrested my attention, and led me to suppose the disease was not hydrocephalus, the state somewhat differing from coma, was finding on further inquiry, that it came on after diarrhœa, and not with any symptoms indicating an affection of the head. The child recovered under the use of wine and nourishment.'

" ' The remedies for this affection,' says Dr. Hall, ' are such as will check this diarrhœa, and afterwards regulate the bowels, and restore and sustain the strength of the little patient—especially brandy and proper nourishment are to be given according to circumstances— * * * the young milk of a young and healthy nurse is the best remedy of all; in the absence of which, asses' milk may be tried, but certainly not with the same confident hope of benefit.' "

" Dr. Hall follows up this account with some excellent cases very illustrative of his views; he also quotes the following observations of Dr. Gooch, which, like all that this excellent practitioner ever penned, are worthy of attention.

Case 5.—"'A little girl about two years old, small of her age, very delicate, was taken ill of the symptoms which I have above described. She lay dozing, languid, with a cold skin, and a pulse rather weak, but not much quicker than natural. She had no disposition to take nourishment. Her sister having died only a week before of an illness which began exactly in the same way, and some doubts having been entertained by the medical attendant of the propriety of the treatment, leeches were withheld, but the child not being better at the end of two days, the parents, naturally anxious about their only surviving child, consulted another practitioner. The case was immediately decided to be one of cerebral congestion, and three leeches were ordered to be applied to the head.

"' As the nurse was going to apply them, and during the absence of the medical attendants, a friend called in who had been educated to physic, and who had great influence with the family; he saw the child, said that the doctors were not sufficiently active, and advised the number of leeches to be doubled. Six therefore were applied; they bled copiously: but when the medical attendants assembled in the evening,

they found the aspect of the case totally altered, and that for the worse; the child was deadly pale, it had scarcely any pulse, its skin was cold, the pupils were dilated and motionless when light was allowed to fall upon them, and when a watch was held to its eyes it seemed not to see. Who can doubt that here the insensibility of the retina depended on the deficiency of its circulation.

'The next day she had vomited her food several times, it was therefore directed that she should take no other nutriment than a dessert-spoonful of asses' milk every hour, and this was strictly obeyed and continued for several days. The child wasted, her features grew sharp, and every now and then she looked fretful, and uttered a faint squeaking cry; the eyeballs became sunk in the sockets, like those of a corpse that had been dead a month; the skin continued cool, and often cold, and the pulse weak, tremulous, and sometimes scarcely to be felt. Under this regimen and in this way she continued to go on for several days. At times she revived a little, so as to induce those who prescribed this treatment to believe confidently that she would recover; and she clearly regained her sight, for if a watch was held up to her she would follow it with her eyes. She lived longer than I expected—a full week, and then died with the symptoms of exhaustion, not those of oppressed brain. The head was opened by a surgeon accustomed to anatomical examinations, and nothing was found but a little more serum than is usual in the ventricles.' "

"If the reader has perused the foregoing case attentively, and has reflected on it, he will of course draw his own conclusions. I can draw no other than these; that the heaviness of head and drowsiness which were attributed to congestion in the brain, really depended on a deficiency of nervous energy; that the bleeding and scanty diet aggravated this state, and caused the death of the child; also, that the state of the eye which so speedily followed the loss of blood, and which resembled that occasioned by effusion, did, in reality, depend on deficiency in the circulation of the brain, a fact of considerable curiosity and importance.

"I will now relate a case similar in the symptoms but very different in the treatment and results.

Case 6.—"I was going out of town one afternoon last summer, when a gentleman drove up to my door in a coach, and entreated me to go and see his child, which he said had something the matter with its head, and that the medical gentleman of the family was in the house, just going to apply leeches. I went with him immediately; and when I entered the nursery I found a child ten months old, lying on its nurse's lap, exactly in the state which I have already described—the same unwillingness to hold its head up, the same drowsiness, languor, absence of heat, and all symptoms of fever. The child was not small of its age, and had not been weak, but it had been weaned about two months, since which it had never thriven. The leeches had not been put on. I took the medical gentleman into another room, related to him the foregoing case, and several similar to it, which had been treated in the same way. Then I related to him a similar case which I had seen in the neighboring square, which had been treated with ammonia in decoction of bark and good diet, which had recovered; not slowly, so as to make it doubtful whether the treatment was the cause of the recovery, but so speedily that at the third visit I took my leave. He consented to postpone the leeches, and to pursue the plan which I recommended. We directed the gruel diet to be left off, and no other to be given than asses' milk, of which the child was to take at least a pint and a-half, and at most a quart, in the twenty-four hours. Its medicine was ten minims of the aromatic spirit of ammonia in a small draught, every four hours. When we met, the next day, the appearance of the child proved that our measures had been right; the nurse was walking about the nursery with it upright in her arms. It looked happy and laughing; the next day it was so well that I took my leave, merely directing the ammonia to be given at longer intervals and thus gradually withdrawn; the asses' milk to be continued, which kept the bowels sufficiently open, without aperient medicine.

"So inveterate is the disposition to attribute drowsiness in children to congestion of the brain, and to treat it so, that I

have seen an infant four months old, half dead from the diarrhœa produced by artificial food, and capable of being saved only by cordials, aromatics, and a breast of milk; but because it lay dozing on its nurse's lap, two leeches had been put on its temples, and this by a practitioner of more than average sense and knowledge. I took off the leeches, stopped the bleeding of the bites, and attempted nothing but to restrain the diarrhœa and get in plenty of nature's nutriment, and as I succeeded in this, the drowsiness went off and the child recovered. If it could have reasoned and spoken, it would have told this practitioner how wrong he was; any one, who from long defect in the organs of nutrition is reduced so that he has neither flesh on his body, nor blood in his veins, well knows what it is to lay down his head and doze away half the day, without any congestion or inflammation of the brain.

"This error, although I have specified it only in a particular complaint of children, may be observed in our notions and treatment of other diseases, and at other periods of life. If a woman has a profuse hemorrhage, after delivery, she will probably have a distressing headache, with throbbing in the head, noises in the ears, a colorless complexion, and a quick, weak, often thrilling pulse, all which symptoms are greatly increased by any exertion. I have seen this state treated in various ways, by small opiates, gentle aperients, and unstimulating nourishment, with no relief. I have seen blood taken away from the head, and it has afforded relief for a few hours, but then the headache, throbbing and noises have returned worse than ever; the truth is, that this is the acute state of what in a minor degree and more chronic form, occurs in chlorosis, by which I mean pale-faced amenorrhœa, whether at puberty or in after life. It may be called acute chlorosis, and like that disease is best cured by steel, given at first in small doses, gradually increased, merely obviating constipation by aloetic aperients.

Mr. Solly further says:—"My esteemed friend and colleague, Dr. Risdon Bennett, in his admirable work on hydrocephalus, advocates the doctrine that this disease assumes very distinct forms, and that though it undoubtedly does arise in

some instances from inflammation, in others it arises from an opposite condition. He says—'There can be no difficulty in admitting that the physical alterations of softening and serous effusion may be induced by functional and organic changes, very different from inflammation or any allied morbid action.' He considers that in by far the largest class of cases, the disease is essentially the *result of Scrofulous* [*scorbutic*] *action*, and may or may not be attended by the signs of inflammation."

Remarks.—I have omitted to place in italics any further phenomena of the above cases, because the *whole* observations and illustrations are emphatically in point. The views and cases are altogether apropos. They run in the same orbit—are of the same character, stripe, and type, as thousands of cases in the United States yclept Cholera Infantum, that are treated with leeches to the temples, ice to the head, mercurial alterative powders in broken doses internally, blisters behind the ears, innutritious arrowroot and gum Arabic diet, etc.; but they soon pass from the hands of the doctor into those of the undertaker.

Call it, reader, what you please, either as Mr. Solly does, *anæmic coma*, or as Dr. Marshall Hall does, an *hydrencephaloid affection*, or as Dr. Abercrombie inclines with the authority of the older writers, *apoplexia ex inanitione*, or by the cognomen it bears in the United States, *Cholera Infantum*—I hesitate not, after many years' observation and the proofs of treatment in a goodly number of cases, to pronounce it the more common mode in which *scorbutus* manifests itself in infants.

What one learns by studying the symptoms, signs, and proofs of treatment in the school of experience, little by little, during his wearing and anxious professional devotions at the bed-side, through many long years of practice, it were idle to gainsay, discredit, dispute, or lightly conclude that he may be mistaken in his knowledge. When I say, then, that twenty years ago, cases of this kind began to impress me with intense anxiety, not only as a physician but as a father, and that situated in practice where the *land scurvy* in the form of that anomalous affection, called in the United States the

Nursing Sore Mouth, or *Puerperal Anœmia*, was epidemic during certain years, and infants at the breast were often observed participating in it, with all the symptoms of *Cholera Infantum*, this running into *Anœmic Coma*, often into convulsions, and so into the hands of the undertaker, I was forced into this generalization of the matter; and twenty years observation has but added new proofs, strengthened and confirmed, and finally settled this great truth in my mind. I could draw up and detail any reasonable number of cases beyond what I have, but have preferred to offer Mr. Solly's views, with the respectable illustrations, parallel views, and cases of the distinguished authors he quotes, in place of my own, but running precisely parallel with mine, except that we differ a little as to the name by which the affection should be called.

I must be permitted to remark here, that calling this starved pathological condition the one thing or another as those respectable London practitioners have done, as *anœmic coma*, an *hydrencephaloid affection*, or *hydrocephalus from softening* of the brain, answers no profitable end, scarcely, in indicating what should be done, or in applying the knowledge of former medical experience to usefulness. Yes, calling it *anœmic coma* does advance truth and stave off leeching: and calling it *apoplexia ex inanitione* throws more light on the subject, and begins to indicate by a name what the cause is, and what course to pursue to overcome the difficulty; but still, this does not bring down the treasures of professional knowledge laid up in the overlooked name I give it, and hold that it legitimately deserves, and no other, viz., *scorbutus;* which tells the whole story, and indicates the proper treatment with the same certainty in results as quinine produces in ague. It not only tells the tale as to the sick infant, but as to the mother, aye, the whole family; for often quite a plurality of the family, perhaps all, or all but one of the little innocents of certain families, pass away from the hands of groping physic into the grave, during the same season—the same scorbutic year.

I have known as many as three children of a family to fall victims of this scourge in several instances—to be swept off

to the grave the same season—the hopes of parents crushed, their spirits broken, when *all* on which their affections centered were thus rapidly snatched away from their embrace. This was particularly the case in 1835, in 1846 and 1847, and in 1849, the constitution of which years I have before considered, showing, past all doubt, that the inlaid scorbutic diathesis in those families was the difficulty—but this essay is now already too long.

In conclusion—I am well aware that new truths involving issues of the importance these herein offered do, are apt to be very cautiously received, and make but slow progress, opposed by all errors; but, though their progress be slow, they finally prevail, independently of authority.

APPENDIX.

December, 1855.—Since writing the foregoing Essay in April last, opportunities have presented, during the past summer and autumn, for still farther observations in the treatment of Cholera Infantum on the anti-scorbutic plan, with lemon juice, punch, the native acids of fruits, and a nutritious diet; and in not a single instance, out of some twelve well formed, well marked, strongly characterized cases, has the treatment failed; to say nothing of its success in the frequent minor manifestations of the complaint, met with. In one family, four of the children were attacked, and the mother had the Nursing Sore Mouth. The infant at the breast, six months old, was a fat, plump subject, and seemed the picture of health, when the characteristic fœtid, watery diarrhœa set in, about mld-summer; another child, of four years of age, was attacked, another of thirteen, and the fourth was a lad turned of sixteen. One vial of four ounces of the rhubarb mixture, together with all the acids that they could be induced to make use of, set them right and kept them right. The oldest subject was the most violently attacked, and his case would doubtless have been pronounced Asiatic Cholera, had it been epidemic at the time. He had diarrhœa for four days, when vomiting supervened and held for the best part of two days, considerable fever or reaction being present at evening, and a very foul tongue presenting. A surfeit of unripe cherries, some five or six days before I saw him, was said to be the exciting cause of the diarrhœa. He was attacked about the last of June, and I prescribed for him on the 4th of July. His case was the first. Teaspoonful doses of the astringent rhubarb and catechu mixture, in toddy, soon arrested the vomiting and purging, together with punch and lemonade, the juice of stewed cherries, vinegarade, etc., under the use of which his fever entirely abated, and his appetite returned. The dietary of this family, all the winter and spring, had been mostly destitute of succuleut vegetables. The objective signs of Scurvy were present in the mouths of all the members of the family. In the autumn, the father, mother, and the only child that escaped a Cholera Infantum attack in the summer, hsd an attack of the ague and fever. These are suggestive facts.

The Scurvy was notoriously inlaid and manifest all over the western country last spring, and the past summer and autumn have revealed a more wide spread epidemic of the ague and fever character than has been seen probably since 1835, after the great blight in vegetation and scarcity of succulent vegetable food of the preceding year. These facts point to the

dietary, vicious alimentation, as the cause of fever epidemics — vicious alimentation *versus* malaria.

I suggested in the Appendix to my essay on Epidemic Cholera, that the prevalence of the Yellow Fever during the past summer, was suggestive that *it* might possibly be a scorbutic fever. The facts point that way; and wherever facts lead, the science of medicine must follow. Has any one ever suggested before that Yellow Fever might be a scorbutic fever? Its first appearance was in 1730, in Guayaquil, where it was called *vomito negro*, if I have rightly posted myself on the subject, and it followed a blight in vegetation—disastrous years. It prevailed again in 1740 to '44, during which years a world-wide blight in vegetation occurred—a series of disastrous years following in succession. Lord Anson made his memorable voyage round the world, during those years, and lost the most of his crews by Scurvy. Bisset made his observations in the West Indies, during those years, the basis of his admirable contribution to the literature of Scurvy; and both speak of the tropical fevers of those times as *Scurvies*, in the plural number, inlaid by defective alimentation and developed by tropical heat. This makes it of quite as domestic origin as our learned La Roache would have it, or any one need desire. Bisset says the course of these *hot Scurvies* is swift to death. Is not this the case with Yellow Fever? Whoever will consult the history of the visitations of this American plague, Yellow Fever, will find that it holds an intimate relation to disastrous years and blights in vegetation; that its ravages in Philadelphia in 1793, and other cities of the United States, thence to 1796 or '97, followed blights, dearth and scarcity of succulent food; that the epidemic at Norfolk and Portsmouth, the past summer, obeyed the same law; and it is only necessary to point to New Orleans, the stronghold of Yellow Fever, the great metropolis of the planting States, where sugar, cotton, hemp, rice, corn, tobacco, are the great staples, instead of potatoes, turnips, pumpkins, apples and cider, to wake at least the medical mind to a more promising source of its etiology than is to be found in the sandy deposits of its river levee.

These however are but suggestions. I have not had opportunity for making observations in yellow fever epidemics. I have not tried the therapeutic effects of lemon juice and other acids; but had I the opportunity I would saturate my patients with the juice of oranges and lemons, which Bisset found his only reliance in the hot scurvies of the West Indies, and which seem to me to be identical with the yellow fevers of the Southern States. I would try to bleach the yellow Scorbutic hue out of some few, anyhow, with lemon juice, and drive away the rheumatic bone-aches with it, since it is proved to be a sovereign remedy in Rheumatism, and this was so common a form of scurvy in earlier days. But more especially would I try its prophylactic power, aware of the great danger of sudden death in some manner, form or fashion, under even slight manifestations of Scorbutus. In Southern regions, if people do not live on succulent food and imbibe acid drinks all the time, the soluble salts of the blood pass off so rapidly by perspiration that nature will rebel. But I am elaborating a suggestion that is only incidental.

To return to Cholera and Cholera Infantum. I will observe that other

practitioners than myself have tried the acid treatment during the past season, at my suggestion, and some have reported very favorably, as the following note establishes. I could extend this Appendix by publishing other similar communications, but they really seem unnecessary, and as the promised limits of this essay are filled they are therefore withheld.

November 1, 1855.

M. L. KNAPP, M. D.—Dear Sir: Your paper on Cholera lately came into my hands. Your theory with treatment seemed at least plausible enough to warrant a trial.

Sep. 20, 2 o'clock, P. M., was called to see Mr. R., laboring man aged about forty years. Learned from the attendants the following history of the case. Was seized with severe watery diarrhœa accompanied with vomiting, at two o'clock, A. M. Was visited by Dr. Green who prescribed calomel, camphor, and opium, to be given every two hours. Dr. Green having other engagements of imperative nature, left at six, A. M., giving urgent instructions to call other assistance.

Present symptoms—countenance anxious, eyes sunken, voice weak and husky, tongue slightly furred, gums very red, skin clammy and torpid, extremities cold, pulse altogether imperceptible, lower extremities constantly and severely cramped, frequent vomiting, diarrhœa ceased at twelve o'clock, M. Patient very restless, constantly throwing himself about on the bed.

I immediately ordered of Citric acid a drachm, Sulph. quinine five grs., Morph. Sulph. one gr., Spt. vin. Gall. four ounces, sacch. alb. one oz., water two pints, mix. A wine-glassful every 20 minutes. Nourish patient with vegetable soups.

At four o'clock, P. M. there was an evident improvement. Skin warmer, voice stronger, vomiting less frequent, pulse just perceptible at the wrist. Visited patient again at ten o'clock, P. M., still improving. Continue treatment. September 21st, at eight o'clock, A. M. visited patient; symptoms of previous day absent; pulse regular but small and weak, patient very drowsy; withdraw Morph. from prescription. Four o'clock, P. M.; patient still improving; give mixture at longer intervals, and take Hydr. Sub. Muriæ. gr. jjj every three hours until bowels are moved.

From this time on, the patient gradually recovered his strength. Some two or three days afterwards the gums bled quite freely, and the patient had much difficulty in swallowing; complained that, the sorness of the mouth extended down the œsophagus of the stomach. There was also considerable bleeding from the anus, which was surrounded by a red raw sore. I should have said above, that until the patient was almost entirely recovered, the gums remained of a fiery red color. The patient's diet during the summer was mainly salt pork.

How much the favorable result of this case is owing to the calomel administered or to your treatment I will not presume to say. I would not think myself justified in adopting a new theory and new practice, in any disease, from its success in a single case, far less justified in rejecting a theory the application of which has been seemingly successful, without giving it a further and more thorough trial.

Yours, etc.,

17th Ward, Cincinnati. E. H. FERRIS, M. D.

P. S.—In the treatment of Cholera Infantum, during the last summer, I have in almost every case used only lemonade, brandy, and quinine, and have been well satisfied with the results of that treatment. E. H. F.

INQUIRY

INTO THE NATURE

OF THE

NURSING SORE MOUTH AFFECTION.

BY M. L. KNAPP, M. D.

Entered according to the Act of Congress, in the year 1856, by
M. L. KNAPP, M. D.
In the Clerk's Office of the District Court of the United States in and for the Eastern District of Pennsylvania.

AN

INQUIRY INTO THE NATURE

OF THE

NURSING SORE MOUTH AFFECTION.

CHAPTER I.

LITERATURE OF THE NURSING SORE MOUTH.

The term Nursing Sore Mouth is so well understood to mean a peculiar form of disease to which suckling women are subject, that its adoption, though it be popular rather than professional, cannot lead to any mistake. There may be some practitioners who have never encountered this disease at the bedside, and possibly those who have never heard of it; yet there are numerous physicians who have met with it and found it a very serious and obstinate affection. The silence in the main of standard or systematic authors on the subject; the omission in the arrangements of the best nosologists of any affection of the mouth peculiar to lying-in women characterized by the phenomena that are manifested in this complaint; and the testimony of the Journals, nevertheless, that such an affection does exist, is often met with, and is greatly on the increase in some localities; render it, most decidedly, a proper subject of inquiry, particularly in the absence of any clear or satisfactory views from those under whose observation it has more frequently fallen, as to its nature, pathology, and rational method of cure. To deny that a peculiar, lingering form of disease, often of very grave severity, characterized

by anæmia, debility, and other phenomena of which soreness of the mouth constitutes a prominent local symptom, now and then attacks women in the state of lactation, and persists, sometimes, in spite of all the remedial measures brought to bear upon the case, finally either proving fatal or terminating in a slow and gradual recovery incident to circumstances, as the removal of the infant from the breast, change of season, etc., rather than the administration of medicines, would be to shut our eyes to facts and experience. The history of hundreds of such cases is annually unwritten, willingly oblivionized among the unrecorded transactions of groping practice: and yet these cases are not wholly lost, for they reach us from the nursery as the reminiscences of many a delicate mother's past sufferings, and forebodings of their re-occurrence, constituting some of the oral literature of this dreaded affection. There are few practitioners, we opine, who have altogether escaped these popular traditions of the Nursing Sore Mouth affection.

The recorded literature of this disease is made up of the brief articles on this subject that have from time to time appeared in the medical Journals. Some of these are mere notices that such an affection has been met with, accompanied with the recommendation of a favorite remedy, perhaps, while others contain well-marked and well-drawn-up cases of the disease. We propose as a starting point in our Inquiry to canvass what is known and what has been published on the subject, so far as we may be able to reach the files of the Journals. It is probable an article may here and there be overlooked, but sufficient testimony will appear to establish very clearly the grave character of the malady; that it is nowhere understood, every where treated empirically; and that it has hitherto failed to receive such careful investigation at the hands of any member of the profession as to settle the question of its pathology and treatment. Prior to glancing into the Journals, however, we will offer the original views of our correspondents, elicited by the following circular, two hundred and fifty copies of which were distributed to leading practitioners

of the United States. We will not marvel that only three medical gentlemen have responded. These three contributions on the subject, however, are valuable. They establish the grave character of the malady, the want of any exact knowledge of its true character, and the further interesting facts that it has puzzled, perplexed and engaged the attention of the profession in sundry parts, and that it is looked upon as a subject of sufficient general interest to demand a searching inquiry. Our acknowledgments are hereby tendered to the courteous gentleman who kindly responded to the call.

CORRESPONDENCE.

Circular.—Cincinnati, Dec. 22, 1853.—Dear Sir: My apology for trespassing on your time and attention is the following, to wit: I am instituting some inquiries into the nature and history of that anomalous affection known in the United States by the popular designation of "*Nursing Sore Mouth.*" Attention has been briefly called to this disease through some of the Journals as a form of "*puerperal anæmia.*"

Having encountered the disease in localities widely apart, and having conversed with physicians in different States who had met with it frequently; I am led to think that it occurs more or less in all the States and British Provinces, but more frequently by far in some localities than others. Although it is believed to occur thus extensively, and so frequently during some years that it may be said to be a not uncommon form of disease, still little is understood of it except empirically, and it is consequently treated with very variable results, the majority of well-marked cases proving obstinate, running a course of some months, and in many instances yielding only with a snail's pace, after the removal of the puny infant from the breast, which dernier resort seems to be a *sine qua non* in the recovery of inveterate cases.

Its literature, I think, is limited to a few fragmentary notices, that have appeared in the Journals within the last few years: nothing is said of this obstinate and sometimes fatal form of disease in our elaborate treatises on Practice and Diseases of Women.

Presuming that this anomalous and nondescript form of disease has come under your notice, and that you will feel

an interest in contributing to its elucidation, I respectfully request you to call to mind your cases of "nursing sore mouth," and the impressions they have left on your mind, and. at your earliest convenience, to draw up and forward to me by mail your observations and experience on the subject. My object is to arrive at just conclusions by means of more extended data than my own observations afford. This appears to me to be a legitimate mode of investigating the subject, and the only practicable method perhaps, for the disease seems to shun the lying-in wards of hospitals (or we should have heard something of it), and to occur wholly in private practice.

Should I be so fortunate as to arrive at any practical deductions deemed of general interest to the profession, and worthy of publication, the condensed views or points of practical importance (and, if not too copious, the views in full) of my correspondents will also appear, that each may receive the award of merit due to his own observations. Allow me to add in this connection that it will give me pleasure to reciprocate the favor at any time you may call on me for a like civility.

Having made known my object and wishes in a general way, I now take leave to call your attention to a few points in detail I wish your answer to cover, which, for your more convenient reference, I have numbered.

1. Topography of your region of country, and how long settled; agriculture and products; state of horticulture and orcharding; general character of disease?

2. Number of years in practice; number of cases of nursing sore mouth met with; history, symptoms, treatment, duration, result of one or two cases as types?

3. If death has resulted in any case, the mode or manner in which it took place?

4. The effect of the disease in the mother on the child; if the infant died, or was removed from the breast, the effect of a suppression of lactation on the progress of the case?

5. Whether cases have occurred more frequently in some years than others; if so, the character or constitution of those years as to temperature, snow, rains, frosts; whether the

crops and fruits were blighted or short; season of its development?

6. Whether attacks have occurred oftener after the first confinement than in subsequent ones?

7. Whether attacks have occurred oftener after very severe labors, flooding, or other prostrating accidents of delivery?

8. Whether you have known an attack follow abortion, or parturition where the infant was still-born, or was removed from the breast and lactation suppressed?

9. Whether the disease has ever to your knowledge made its incursion before delivery; and if so, the effect of parturition on the case?

10. Whether, within the range of your observation, other females than those in a pregnant, puerperal, or suckling state, have suffered an attack of this form of anæmia; and if so, whether concurrently in the same family where a nursing female was laboring under it?

11. Whether, according to your observation, it be a disease peculiar to women; or have you met with the same morbid diathesis and assemblage of symptoms in males, during years of the greater prevalence of this disease?

12. Whether you have noticed in seasons of the more frequent occurrence of this affection, a prevalent, morbid diathesis that seemed to aggravate and render more intractable the common forms of disease?

This covers all the points I wish to have categorically responded to; but any views of your own—any facts or deductions from your practical experience and observation, throwing light on the etiology, pathology, or treatment of this affection, will be thankfully received.

Dr. Ellsworth's Reply.—Hartford, Jan. 21, 1854.—Dear Sir: Many duties have hitherto prevented an answer to your favor of the 22d December. Your letter was handed to a physician having more extensive practice than myself in the department of midwifery, but as he insisted on my writing, you shall have all the information I possess: the questions shall be answered briefly, at least as many of them as it is in my power to answer.

1. Hartford is partly built on the alluvial of the Connecticut River valley, but the county is mainly primitive. The farms are rich, highly cultivated, and possess good depth of soil. Diseases in our valley generally assume a typhoid type, and do not bear the lancet as well as in higher portions of the State, and my impression is that V. S. is not as well borne as some years since.

2. My present experience extends back only fifteen years. The disease under consideration is not of very frequent occurrence, though common enough to excite earnest desire for its amelioration. The treatment, symptoms, etc., have been discussed by our City Medical Society.

3. As a general thing patients have recovered, though weaning has occasionally been necessary to effect this. I have known no case of death from the disease alone.

9. I had a very severe case commencing nine weeks prior to labor; the patient had nearly died from the disease with a previous child, in which case also the complaint made its appearance prior to delivery. She recovered, and I think without removing the child.

The treatment is simple, consisting of good support by way of food, bark with lime-water, carb. ferri, carb. sodæ, and particularly porter. Almost every thing tonic is useful, but especially the articles mentioned.

The minutes of our Society present but little worth mentioning in addition, except a statement made by Dr. Miner, that he knew a severe epidemic of it in Berkshire Co., a mountainous region in Massachusetts, in 1832, and another at Middletown, in Connecticut, in 1836. Dr. Sumner also stated that he found persons subject to this complaint more disposed to phthisis. He had known the disease occur as early as the fifth month of pregnancy. Local treatment does not appear to be particularly serviceable. Some of the questions remain unanswered, because I must either give a negative answer or one of no particular service to you. Hoping what is recorded may be useful to you, I remain, yours, truly, P. W. Ellsworth.

Remarks.—Dr. Ellsworth's contribution establishes the fact

very clearly that the disease in question is not confined to the period of lactation, for he observed its occurrence twice in the same female, and on both occasions it made its incursion before delivery. Dr. Sumner also had observed it as early as the fifth month of pregnancy. It is not, therefore, *caused* by the drain of lactation, as has been supposed. Dr. Ashwell, in considering the complaints developed by undue lactation, makes no mention of any malady similar to the nursing sore mouth affection. We thus establish one point in our investigation, viz.: that the disease is not an affection peculiar to *nursing* women.

Again: another fact of much importance is derived from Dr. Miner's statement in the discussion of the subject before the Hartford Medical Society, viz.: "that he knew a severe epidemic of it in Berkshire Co., Mass., in 1832, (the year of the cholera,) and another at Middletown, Ct., in 1836." The fact established is, the greater frequency of the disease in certain years, amounting to an epidemic in some localities. This accords precisely with our own observations; and if the constitution of those years, as to temperature, snow, rains, frosts, state of the crops and fruits had been given, as called for by our circular, very important deductions, we opine, might be drawn from the premises. In the absence of said particulars we must depend on our own knowledge in the matter.

The winter of 1831–32, was the coldest winter, according to our recollection, we have ever experienced. The harbor of Baltimore, where we then resided, was closed by ice about four months—the Chesapeake Bay was almost frozen across at Annapolis, a circumstance which was then stated in the public prints to have occurred but *once* since the settlement of Lord Baltimore's colony—the harbor of New York it was conjectured might be closed by the ice that winter—we participated in a sleigh-ride, the thermometer at zero, in the month of April, 1832, and the snow well-nigh a foot deep. The Asiatic cholera swept over the United States in the summer of 1832, and what influence the very rigorous winter and retarded spring exerted upon the human constitution in the United States toward rendering it liable to attack, has

never been inquired into. That the Constitution of the seasons and state of the crops and fruits have very great influence over epidemics there can be no manner of doubt; and while our observations tally with those of Dr. Miner as to the occasional epidemic prevalence of nursing sore mouth, we can as emphatically declare that its epidemic manifestations occur *invariably* after cold winters and retarded springs, accompanied with a scarcity of vegetable supplies. The coinciding fact, therefore, of nursing sore mouth occurring in epidemic form, in Berkshire Co., Mass., a cold mountainous region, in 1832, after an uncommonly rigorous winter and a cold retarded spring, is another point made in our inquiry.

As to the epidemic of 1836 at Middletown, Ct., this is not quite so clear. We incline to the opinion that Dr. Miner is mistaken in the date, and that it occurred in 1835, the year of its epidemic occurrence in the West, complicated with other epidemics, as will more fully appear in our chapter on the topography of Illinois, where we discuss the metoric phenomena and constitution of these epidemic years.

In regard to the treatment given by Dr. Ellsworth, we wish particular note to be taken of the good support by way of food, porter as a drink, (full of carbonic acid,) and the preparations of *soda*, *lime*, *iron*, etc., recommended. There is application yet to be made of the principle before we have done, illustrative of the why and wherefore of the efficacy of these acids, salts, alkalies and tonics, combined with wholesome nutrition.

Dr. Hall's Reply.—Glasgow, Jan. 26, 1854.—Dear Sir: Your circular letter bearing date Dec. 22, has been in my possession several weeks, and would have received an earlier response but for the presence of other engagements. Upon its reception I bestowed upon it a careful perusal, and cannot refrain from expressing a hearty commendation of the enterprise you have embarked in, and, so far as any coöperation upon my part may conduce to the results to which your investigations are directed, it is most cheerfully granted. In responding to your inquiries, I have to mention two circumstances which I very much regret should exist—in the first place, the

instances of this anomalous affection have been limited; but more especially do I regret that my observations in reference to these cases have been without that systematic accuracy, in the absence of which, facts in a great degree become valueless as materials for etiological, pathological, or therapeutical generalization.

During the last three years, which embraces the period of my acquaintance with this, as a distinctive type of disease, I have, in some manner, been connected with the treatment of five or six well-marked instances of "puerperal anæmia," besides several cases of minor importance, in reference to which I have been casually consulted. The gravest case which has presented itself to my observation, occurred in the person of a lady who was a resident of Logan Co., in the southern part of this State, and who was at the time I saw her (Aug., 1853,) on a visit to her friends in this neighborhood. This was a very characteristic case. The subject, æt. about thirty-eight years, is habitually anæmic, strikingly deficient in the nutritive function, so much so as to present a very pallid, exhausted appearance, and the buccal affection has regularly recurred, in the early period of lactation, since the birth of her second child—having had six, I believe. The infant then at the breast was about four months old, and from the history of the case elicited from the attending physician and her friends, her general debility increased, and her health continuously declined to this period, when the symptoms had become extremely aggravated. She had been confined to her bed and utterly helpless for fourteen or fifteen days when I first saw her—entire buccal membrane covered with aphthous inflammation, with numerous patches of small ulcers, several large ulcers occupying the edges and inferior surface of the tongue, and some isolated spots of ulceration on the inner surface of the lips, profuse salivation, (not mercurial,) much complaint of vitiated taste with anorexia, pulse 125, and very feeble, with a very low grade of febrile reaction of a regularly remitting type, muscular and nervous exhaustion complete, with extreme feebleness of circulation. So distinctly remitting was the accompanying fever, in this case, that it seemed so urgently to

demand an anti-periodic, that such a measure was resorted to and met the indication very happily.

This imperfectly-descriptive history is equally applicable to two others, the most malignant cases of the disease, with the one described, of which I have any knowledge; and in both these instances the subjects were likewise non-residents of this (Barren) county. One, a young married lady of Gallatin, in Tennessee, came near sinking under a protracted attack, the onset of which dated with the establishment of lactation after the birth of her second child. The other subject of this vitiating infirmity is a resident of Louisville, and, as I have been informed by her sister, who resides in this place, like the first-named case, it has become so much a constitutional vice as to be habitual with each returning period of lactation. The two females last adverted to seem in a good degree to regain and retain their health and vigor throughout the menstrual cycle, but the health of the first is hopelessly dilapidated, though she is measurably free from the essential symptoms of "nursing sore mouth."

The remaining several instances of the affection, which have been presented to my notice, put on a milder form, yet sufficiently serious to become objects of regular medical attention; presenting in a marked manner the conditions of an impoverished circulation, a depraved state of the nutritive and assimilative functions, with more specific local lessons stamped with a less or greater degree of distinctness, in accordance with the mildness or intensity of the attack.

As to therapeutical relations, I conceive that these are, to some extent at least, deducible from the manifest pathological features of the disease. I can but regard the diseased condition as constitutional, consisting mainly of a lesion of nutrition. It may become a question as to where the first link in the chain of morbid actions is to be riveted; but as for my own part, I have learned to regard a vitiated action of the organs of primary digestion as a primitive feature in this pathological state, and other symptoms and conditions as more secondary. The circulating medium certainly becomes greatly depreciated in normal elements, and to replace these constitutes a leading indication of treatment. How to accomplish

this, or the principles upon which it is to be done, involves details and considerations not consistent with my present purpose to discuss. So far as concerns the lesion of the mucous lining of the mouth, I can regard this only or mainly as a local manifestation of a more general diseased disposition, and this consideration would lead us to attach but a secondary value to topical measures of treatment; this my experience fully verifies. I have derived manifest advantage from astringent washes ,or even caustic solutions applied to the diseased membrane; but they are to be relied on as less important auxiliaries of a judiciously devised constitutional plan. One drachm of sulphite of soda to the ounce of water forms a valuable wash. The blood dyscrasia, which constitutes the peculiar diathesis of this affection, must be corrected by a set of measures addressed to the nutritive and assimilative functions—a properly regulated but nutritious diet, exercise adapted to the strength of the patient, and attention to every means of promoting and maintaining the healthful functions of the skin. I have found the most satisfactory results to attend the persevering administration of quinine, chalybeates, the mineral acids, and cod-liver oil, with attention to the state of the secretions.

To speak with more especial reference as to the etiology of puerperal anæmia, I am inclined to discard the influence of climate and locality in the causation of the disease, further than the agency they may exercise in lowering the tone of nutritive life. Thus they may become predisponent agencies; but unless there be an inherent defect of constitution, I should be disinclined to attach much consideration to their influence alone. One of the strongest predisposing causes is, a naturally delicate and enfeebled constitution, and whatever depressing influences may operate to foster and still further deprave this natural disposition to the establishment of the anæmic diathesis: nothing further is wanting to give to the disease its distinctive and characteristic development, but the withdrawal, from the already scanty maternal supplies, of such nutritive elements as answer the demands of gestation and lactation. I will suggest a circumstance in this connection: I have observed in a majority of cases falling under my notice, that the

child is very prone to muguet during the existence of the other disease in the mother. How far may the vitiated materials of nutrition derived from the mother contribute to the development of muguet in the child?

I will now bring to a close this communication, already extended greatly beyond the contemplated limits when I sat down to write. It will afford me decided satisfaction, at all times, to reciprocate favors of this character, and as a beginning I would gladly have pointed out to me a more successful plan of treating malignant epidemic scarlatina, than experience and reading have, as yet, enabled me to arrive at. I am, most respectfully, yours, etc., J. P. HALL.

Remarks.—The points of particular interest in Dr. Hall's paper are, the kind of constitution most liable to this affection, viz.: feeble, delicate, breeding, and suckling women—its constitutional rather than local seat—its pathology in his judgment being a lesion of nutrition—its sporadic appearance in Kentucky and Tennessee—its very marked, grave, and chronic character—its low grade of remittent febrile exacerbations—the ulcerated condition of the mouth and tongue, attended with profuse salivation not mercurial—the impoverished state of the blood the cause of the disease, and to supply the circulation with normal elements the chief indication in the treatment—and the observed fact that the infants at the breast, in the majority of cases, are also affected with sore mouth. In fine, this contribution comes to us with a freshness from the bed-side of observation in this disease that is exceedingly forcible and instructive, and much to our aid and assistance in these researches. When we come to sum up and offer our views of the nature of this affection, having first set forth all the testimony we can find on the subject, the attention of the careful reader will revert to these practical views of Dr. Hall.

Dr. Judkins' Reply.—Cincinnati, 4th Mo., 1854.—DEAR DOCTOR: Thy circular of inquiry relative to "nursing sore mouth," which thou wert so kind as to send me some weeks ago, I have taken the first favorable opportunity to answer.

In the early part of my practice, I do not now remember to

have met with this affection. I often met with diseases, over forty years ago, affecting the mucous tissue resembling stomatitis; also an aphthous condition in children in the same membrane.

Within the last twenty years, but more especially within the last ten years, my attention has been more particularly drawn to notice this adult female disease, for I do not remember ever seeing the disease in any other persons than adult women, and in these only while in the state of lactation.

Females of a lax fiber, thin in flesh, rather of anæmic appearance, are those generally whom I have been called upon to treat for nursing sore mouth. I have known some ladies so predisposed to the affection as never to go through a lactation without it, and others, with slight hygienic directions, to escape during the second and third lactations, and perhaps to the end of child-bearing; showing that a strong tendency or predisposition exists in some females to morbid derangements and ulcerations of the mucous linings of the primæ viæ. I say hygienic directions, by which I wish to be understood well-aired rooms for lying-in women; pretty good diet after lactation is established; bathing the skin often over the region of the uterus, both anteriorly and posteriorly, with tepid water, and after which staying the muscles of the abdomen with a bandage; patients to be taken out after their infants are three weeks old, to ride in the fresh air when the weather is suitable; and to be allowed to receive the visits of affectionate friends at suitable times, etc.

In tracing the symptoms as they are developed in this disease, it has manifested itself as *sui generis*, and is confined in its locality, incipiently, to the mucous membrane of the primæ viæ. I am led to this conclusion from the symptoms only in the living subject, having never yet made a post-mortem examination to prove this position. There appear to be three stages in the regular phenomena of nursing sore mouth, viz.: irritation, inflammation, and ulceration. In addition to these there is (as in most idiopathic diseases) a forming or fixing condition in order to bring about the disease itself, and this is indicated by lassitude, debility, and coolness over the body. Shortly after the lady complains of heat and irritation in the

mouth, with a preternatural secretion of saliva; then follow red spots on the sides of the tongue and mouth, which, in a few hours, sometimes terminate in ulcers; ragged ulcers of from half the size of a three-cent piece to that of a fifty cent piece. Soon after things have developed themselves thus far, the lady complains of pain and tormina all through the bowels, indicating the same altered structure and ulceration in the primæ viæ throughout.

In the second stage fever is observable, and the irritation occasioned by the ulcerations through the track of the first passages keeps it up for some days, say two or three, unless mitigated by some remedy, yet in common incipient cases lactation is but little retarded; but if the disease is permitted to continue for a few weeks, general debility and loss of flesh follow, and the secretions become morbid and the milk fails. Generally speaking, from the time that the first irritation is observable below the pylorus, the bowels begin to act preternaturally, and the dejections are commonly of a thin watery consistence, inclined to light color. I say generally, but there are some exceptions. I have seen cases where the bowels have been confined during the progress of treatment, except when moved by the administration of laxative medicines, but never without pain.

After the disease has been of two or three weeks' standing, by examining a recent alvine evacuation, we discover *floating floculi* in the chamber-vessel of a mucous appearance; this, taken in connection with some of the other symptoms, viz: ulceration, heat, burning pain, etc., in such portions of the mucous tissue as can be seen, lead to the belief that there are ulcerations in the mucous linings of the bowels, nearly, if not entirely throughout the whole track, from which the mucous secretions became separated and found their way to sight.

If this state of morbid derangement continues for two or three months, the body becomes emaciated, hectic fever ensues, and, where there is a strumous diathesis existing, we will have tuberculosis developed, with cough, hemoptysis perhaps, and other fatal symptoms to close the scene.

I will now touch upon the important point in the treat-

ment. Every intelligent physician, with whom I am acquainted, has his favorite prescriptions in this female affection; and as I have been called to prescribe for quite a number of patients, I will only notice what course I have adopted, hoping, that when my experience is added to that of others, something may be sifted out that will be of service. There are two prominent indications to be fulfilled in the treatment: in the first place, we must endeavor to correct the ulcerative process or heal the mucous tissues, and in the second, to restore the morbid secretions and disordered functions to a normal standard.

Unfortunately, the cases that have come under my care have mostly been chronic, and hectic symptoms more or less existed, with diarrhœa, tormina, general emaciation, restless nights, suppressed lactation, etc., etc. I begin the treatment by giving bicarbonate of soda, in fifteen-grain doses, dissolved in a tumbler of water, three times a day, which soon corrects the *acid* and *acrid* secretions in the first passages; and, in order to avert diarrhœa, I combine about five drops of the tincture of opium with each dose; order the patient to be well bathed in tepid water, once in the twenty-four hours, when the exacerbations of febrile action are at the highest point; regulate the diet, and avoid such articles of fruits and vegetables as have a tendency to irritate the tender granulations with which they may come in contact, or may exert an unhealthy influence over assimilation, but at the same time enjoin a generous, or *good rich diet.* After a few days thus treated, I give the patient one of the following pills three times a day.

Nitrate of silver, . .	gr. x.
Denarcotized opium, . .	gr. iv.
Gum camphor, . .	gr. v.
Disulphate of quinine .	ʒj.

M. f. pil. No. xxv.

As the symptoms vary and improve, I suspend in part or altogether the medicinal treatment, as would occur to any physician, watching the effect of remedies, and the turn and

change of symptoms of the patient. Under this plan of treatment I have, but in one case for several years, been under the necessity of taking the child from the breast of its mother, though I am aware of the great assistance afforded thereby in the cure. Very respectfully, thy friend,

WILLIAM JUDKINS.

Remarks.—Our circular was sent to Dr. Judkins, understanding through some of his patients, whom he had treated for this affection, that he possessed skill in its treatment, and enjoyed some reputation for its successful management, beyond that of the generality of physicians. His success, it now appears, depends on the liberal use of *a salt of soda, tonics and astringents, with good food, and tepid ablutions daily;* a course well calculated to promote, coax, urge, even *force*, the nutritive process. This practice appears very rational, certainly, and in the absence of a true pathology, and the real cause of the affection not known, must be regarded as happy. When we shall have unfolded the *essential nature* of this anomalous affection, the why and wherefore of the success of Dr. Judkins' practice will be clear.

The points of particular interest, then, in Dr. Judkins' paper are, the apparent increase of this affection of late years—delicate ladies its subjects—its liability to recur—good, rich diet a preventive—pain and tormina of the bowels always present in marked cases, together with a watery diarrhœa, and *white floculi floating in the dejections, as in cholera!* No other contributor to the literature of this affection, we believe, has taken notice of this last circumstance—a very important fact. Doubtless these floating floculi are cast-off patches or sloughs of the epithilium, the same as in cholera and not mucous secretions, as Dr. Judkins supposes. The tendency to grave local lesions, and the development of tuberculosis, hemoptysis, etc., is another point of importance to be borne in mind in this very practical contribution.

Let us now consider the literature of this disease.

CONTRIBUTIONS TO THE JOURNALS.

The main contributions upon this supposed new form of disease, are from Drs. Hale, Backus, Channing, Bell, Wood, Shanks, Taylor, Holt, Ware, McGugin and King, in the United States, who have described it as it appeared in the extreme eastern, western, northern and southern States. These contributors have described the affection from personal observation, with the exception of Drs. Wood and Bell of Philadelphia, who have given it place in their standard systems of practice as a new form of disease on the testimony of others, and chiefly Drs. Hale and Backus, who were the first to call attention to this anomalous affection through the Medical Journals—Dr. Hale's article having appeared in 1830, and that of Dr. Backus in 1841.

Beside the above-named American contributors to the literature of this anomalous affection, we find that Dr. Marshall Hall, of London, wrote a treatise on a similar anomalous disease, in 1820, designated by the very indefinite appellation of "*a serious affection*," which, appearing to us the same as the nursing sore mouth of this country, we shall begin our synopsis by analysing.

Dr. Marshall Hall's Treatise.—A review of this may be seen in the London Medical and Physical Journal for July, 1820, with copious extracts,—our source of information. Dr. Hall appears to have encountered an epidemic of this affection in the early period of his career, and, without venturing an opinion as to what it was, wrote a treatise of ninety-six pages on it, entitling it, "*Cases of a serious affection chiefly occurring after delivery, miscarriage, etc., and of a similar affection unconnected with the puerperal state.*" The general character of the serious affection of Dr. Hall appears to us to be the same as that of puerperal anæmia, or the nursing sore mouth, since described in the Journals of this country—its victims are the same, and there is a striking similarity in the history and progress of the cases—the whole phenomena in fact, even to the mode of death. Dr. Hall's cases do not, perhaps, appear to have been characterized by as marked a

tendency to ulceration of the mouth as the general run of cases described in this country, though, from the fact that those persons were among its frequent victims, who suffered from "aphthæ with irritable stomach," it is evident that sore mouth was a symptom generally in Dr. Hall's cases.

The causes of the affection Dr. Hall supposes to be, irritability and exhaustion following the shock, drain or fatigue of the system incident to parturition, abortion, or lactation.

The subjects of the disease are those exhausted by diarrhœa or other sickness previous to delivery; those of pale, icterode complexion, who had been anasarcous, or who had suffered from aphthæ with irritable stomach and bowels; those exhausted by repeated and prolonged uterine or other hemorrhage, or depletion for subduing inflammatory diseases; and the naturally delicate and feeble. He has seen it suddenly developed after venesection, and also after full purgation. Anxiety, alarm, and disturbance of mind have seemed to cause it. The affection in some instances came on in the latter period of pregnancy. Sudden and unexpected death sometimes occurred after delivery, or even after blood-letting. By a removal of the exciting cause, as a prolonged menorrhagia or an exhausting lactation, the prominent or urgent symptoms frequently ceased. The affection sometimes proved fatal after a more or less urgent, protracted, and varied course; and in other cases there was long-continued indisposition. The doctor attempts to arrange his cases under six varieties, as follow: "1. The acute; 2. The more continued; 3. With general symptoms; 4. With some predominant local affection; 5. As the effect chiefly of intestinal irritation; or 6. Of hemorrhage. The greater number of cases, however, do not admit of being referred to any one of these divisions, distinctly or exclusively, but assume a mixed character." He arranges his account of the symptoms with reference to the regions of the body affected, as follows:

The head.—"Severe pain, beating and throbbing, rushing or cracking noises, vertigo on assuming the erect posture, intolerance of light and sound, wakefulness, starting during sleep, waking hurried and alarmed, faintness, feeling of sink-

ing, of impending dissolution, overcome by noise, disturbance, and thinking even, and delirium.

" *The heart* is in different cases affected with palpitation, fluttering, irregular and feeble action; there are beating and throbbing of the carotids, and sometimes even of the abdominal aorta; great rapidity and sometimes irregularity of the pulse; faintness or fainting; urgent demand for the smelling-bottle, fresh air, fanning, bathing of the temples; feeling of impending dissolution; incapability of bearing the erect position; and sometimes early fainting from V. S.

" *The respiration* is affected in different cases with panting, sighing, heaving, gasping, moaning, blowing, catching, with urgent demand for fresh air. There is sometimes great and alarming oppression about the chest. There is in some cases an irritative cough.

" *The stomach* is liable to become affected with irritability, sickness, retching, vomiting, hiccough and eructation; the bowels with constipation or diarrhœa, pain, flatus, distension, etc.

Muscular system.—" There are very frequently urgent restlessness, tossing about and jactitation. In some cases various spasmodic affections have occurred.

" *The seats of pain* are usually the head, the side, the illiac region, the loins, the uterus, and the abdomen generally. The pain of the illiac region and of the abdomen are often attended with much tenderness."

Dr. Hall impresses the idea that this affection will never bear blood-letting, although the local affections often lead the practitioner to believe inflammation present. He does not attempt to explain the nature and pathology of the affection. The broken down and debilitated are its victims, and the greater the weakness the greater the susceptibility. *Males are sometimes attacked with this complaint.* The indication in the treatment is to restore the vital energies.

Remarks.—It is very evident from Dr. Hall's account of this affection, its causes, its subjects, its very varied and grave constitutional symptoms, with complete prostration of the vital powers, while seeming grave local inflammations are apt to set in and mislead in the treatment. that the " serious affec-

tion" described by him in 1820, in the British Journals, is identical with the "nursing sore mouth" affection first described in the Journals of this country in 1830 by Dr. Hale; at least it appears so to us, and the anomalous character of the cases being such as to prevent Dr. Hall from naming the disease, is strong confirmation of this. The identity of the two affections being conceded, we here establish another point of great importance in our researches, viz.: that *males are sometimes subjects of the complaint.* This accords with our experience, although the idea has never been hinted in the Journals of this country. We have repeatedly seen men and boys subjects of the complaint, and also girls, as well as suckling women. Hence we infer that pregnancy and lactation are causes of the affection only so far as they tend to impair the general health by confinement or want of proper exercise in the open air, improper restrictions in diet, a gloomy state of mind, exhausting drains by hemorrhage, etc.

The special attention of the reader is invited, in these cases of Dr. Hall, to the prominent symptoms, viz. lassitude, sinking, fainting, interic pallor and anæmia, pain and tenderness of the abdomen, diarrhœa or constipation, aphthous ulcers and other local lesions, hemorrhagic associations, protracted course, getting well when the exciting cause was removed, as an exhausting menorrhagia or lactation, fatal tendency, sudden mode of death after some shock, as parturition, etc. We wish the reader also to notice the sudden development of the disease sometimes after a shock, as blood-letting, catharsis, or merely from the emotional shock of fear. All these are very instructive.

Contributions of American Physicians.—As before observed, Drs. Hale and Backus, appear to have been the first to describe this affection in the United States, and an analysis of their contributions might, very properly, take the lead; but we prefer to place the most accurate account of the disease that has met our view first in order, and therefore give the substance of

Dr. McGugin's Article.—This valuable contribution appeared in the *Western Medico-Chirurgical Journal*, published

at Keokuk, Iowa, October, 1851, and is styled "*Stomatitis in Pregnancy and during Lactation.*" In the outset, the affection is stated to be the ulcerative sore mouth consequent upon and occurring during pregnancy and nursing, particularly described by Drs. Hale and Backus. The idea is entertained that it is a disease peculiar to this country, rare on the sea-board, more common elsewhere. The doctor had met with several cases in two years' practice at Keokuk—says its pathology is not understood, and why it appears in certain localities, and whether or not caused by miasm, not known to the profession. Thinks local causes only act feebly in its production, that the real cause is in the system, for that the disease is relieved when the infant is removed from the breast—has found the scrofulous constitution most subject to it—thinks it arises from faulty nutrition, and that pregnancy, which favors excitement in the lymphatic system, somehow tends to develop it—that the glands of the mouth largely partake in the excitement, and in lax and strumous habits the feeble integrity of the tissues gives way to ulceration. Passing from the doctor's theories, we give his more valuable delineation of symptoms.

"The patient complains of burning heat, similar in sensation to that produced by hot fluids, when taken into the mouth. Food, when taken, even of the blandest kind, is swallowed with pain and difficulty, and that which is solid is masticated imperfectly and painfully. The lower lip is tumefied, and turns out and downward, and in the efforts to speak, the saliva, limpid and scalding, pours over it. There is pallor of the face, an anxious and painful expression of the countenance, and a crescentric dark circle below the eye. The pulse is small and frequent, the skin dry, and the mind irritable and despondent. The mucous lining of the mouth is highly vascular and livid in color, the tongue red and often swollen, and early in the attack small granular elevations may be seen along its edges and tip, and still more highly vascular than even the surrounding mucous membrane. These points are highly sensitive, and much suffering is produced when the tongue touches the teeth or jaw. Very soon these show yellow vesicles on their tops, and in a short time these burst, leaving an ulcerated tip or depression, and rapidly, under the ulcerative process, extend

themselves over the surface. They now multiply in number, and may be found within the lip, under the tongue, within the cheeks, and in the fauces. Now the suffering is great, for the surfaces of these ulcers are most sensitively endowed. They may extend down the œsophagus into the stomach, throughout the intestinal tube, into the posterior nares, down the trachea, along the bronchiæ, and finally involve the lungs in an irreparably diseased condition."

Case.—"Mrs. W———, of scrofulous predisposition, and advanced to the seventh month of pregnancy, had been laboring under stomatitis for three weeks before advice was taken. The tongue, the lips, the cavity of the mouth and fauces, were thickly covered with ulcerated patches. From the difficulty of swallowing, it was also manifest that it had proceeded downward along the lining of the œsophagus, and it was just as evident that the mucous coat of the stomach was also seriously involved. There was much suffering on deep pressure in the epigastric region, and food was rejected immediately upon swallowing it. The symptoms pointed to a diseased condition of the cardiac orifice. There was at this time some constipation of the bowels. After a time, from a change in the voice, together with a sense of tightness of the part, and stiffness of the muscles of the neck, it was evident that the larynx and trachea were suffering also. There was slight cough, with a muco-sanguineous expectoration, and upon retiring to bed, the semi-recumbent posture was chosen to favor inspiration, in which position the head was thrown back. There was slight dullness upon percussion over the entire thoracic surface. There was feeble respiratory murmur, owing to the thickened walls of the larynx, aided, doubtless, by the preternatural smallness of the chest.

"She had now arrived at the eighth month of her pregnancy, the previous month having been spent in the foregoing developments. The symptoms now assumed a more grave character; the cough was constant and harrassing; the sputa thick, tenacious and slightly sanguineous; wandering pains through the chest; respiration difficult at intervals; dullness over the entire thoracic surface, particularly manifest in the superior sternal and the right clavicular regions. There was

bronchial respiration, but no vesicular murmur; irritability of the stomach so great as to reject food, drink or medicine. The dejections showed a large admixture of thick tenacious mucus, similar to that expectorated.

"About the middle of the eighth month the following were the symptoms: There had been a large discharge of pus in coughing; pectoriloquy in right infra-clavicular region; the ulceration had extended to the posterior nares, followed by alarming epistaxis, doubtless from the destruction of a vessel in the progress of ulceration; the irritability of the stomach continues as before; colliquative diarrhœa and hectic fever; cough persistent; sputa purulent and muco-purulent.

"Her confinement, which was now close at hand, was looked forward to as an event which would close her sufferings. All the symptoms continued in an exalted form up to this period, when uterine contraction came on, and her labor was concluded in two hours from the first evidence of uterine effort; was easy, and followed by but little loss in discharges. She, however, began to sink rapidly, and in eight hours from the delivery of the child she died. The child was less than the average, but appeared healthy. In a few days, however, as I learned, it sank rapidly with similar symptoms to those of the mother.

"The treatment was such as would naturally suggest itself; but the irritability of the stomach opposed a serious difficulty to the prosecution of any treatment, or a fair trial of any remedial agents internally."

In commenting on this case, Dr. McGugin notes the rapid development and extent of the local lesions, particularly phthisis, which is ordinarily hushed in pregnancy, but here it was developed.

Where the disease comes on after delivery or during lactation, he says, "it is attended with prostration, and even before the attack there is a sense of sinking and depression." Thinks the drain upon the system in the secretion of milk favors the rapid development of the disease, and therefore the infant should be separated from the mother before she is permitted to sink into hopeless anæmia. Suggests that animal chemistry may, by analysis of the milk, yet throw light on

the pathology of the disease. Illustrates the imminent hazard that sometimes presents—the mother laboring under this affection, and the infant in the critical period of dentition—to wean may be death to the child, and not to wean death to the mother. Such a case came under the doctor's care the summer previous, and caused him much anxiety, but he saved both mother and child. The cure of the mother was ascribed to hydriodate of potash, a nutritious diet of broths, and porter as a drink. Several subsequent cases, he says, yielded to the same course of treatment; one especially, where, in a prior attack, weaning the child had to be resorted to in order to save the mother. Dr. McGugin says he has no confidence in any other remedy. The hydriodate of potash in solution also recommended as a gargle, and iodine to be added where the ulcers are "dark and ill-conditioned." Cinchona, porter, nourishing jellies and soups, and warm saline baths. If these means fail, wean the child.

Remarks.—Dr. McGugin's description of the disease and case reported illustrate the symptoms, progress, fatal tendency and sudden mode of death after a shock to the system, so accurately, that nothing is wanting but the anatomical characters to render his contribution complete. To be sure he infers what, no doubt, an autopsy in the case would have revealed, viz.: ulcerations or lesions of the epithilium throughout the gastro-pulmonary branches of the mucous membrane—that is, in spots and patches. The sero-sanguineous salivation, alarming epistaxis, and development of tuberculosis, justify this conclusion.

We have witnessed several instances of *sudden and unexpected death* after delivery in this affection, as noticed by Dr. McGugin and Dr. Marshall Hall, and shall speak more at length of this feature of the disease in our analysis of cases. Suffice it that we invite especial attention to it in this connection, as also to the *hemorrhagic tendency* spoken of by Drs. McGugin and Hall. The reader should also bear in mind the *prostration and sinking*, spoken of by Dr. McGugin before the disease comes on—that is, before the mouth becomes sore. This is doubtless the "forming or fixing stage" of the affection spoken of by Dr. Judkins. The local lesions, then, are

secondary, according to these contributors, which accords with our experience. Here then we establish another important point in our researches, viz.: that the local lesions of the mouth, fauces, stomach and bowels, posterior nares, and bronchial membranes, are consequent upon the general or constitutional affection. One other symptom, or rather objective sign, noticed by Dr. McGugin, is worthy of special attention; it is the highly vascular and *livid color* of the mucous lining of the mouth, spoken of. The papillary blisters or yellow vesicles that form on the sides of the tongue, and spread to all parts of the mouth and fauces, stomach and bowels, etc., are spoken of by others, as are constipation and diarrhœa. We wish the reader also to take note that a *salt of potash* is Dr. McGugin's main remedy; not that he was the first to call attention to the efficacy of a salt of potash or soda in this disease, but because he bears testimony to this fact. In the dietary he prescribes, viz.: *nourishing jellies and soups*, aided by porter, cinchona and warm saline baths, he agrees well with other contributors. Calling attention to one other circumstance, viz.: the sinking and death of the infant "with similar symptoms to those of the mother," we will close our comments on this very instructive contribution.

The *Contributions of Drs. Hale and Backus* are made the basis of the descriptions of this affection to be found in *Stokes and Bell's Practice*, second edition, page 54; and also in *Wood's Practice*, third edition, vol. 1, page 500. Both of these standard authors, Bell and Wood, have taken it for granted that this is a new form of disease, without ever having seen it, or had an opportunity of investigating its character! Both reflect the opinions of Drs. Hale and Backus, that the disease is at first a local affection or ulceration of the mouth, extending by degrees to the fauces, stomach and bowels, and thus secondarily involving the constitution, and breaking down the general health; and both follow the dogma inculcated by these and most other contributors, that the disease is peculiar to suckling women, though it may possibly occur in the latter months of pregnancy. According to these authors, Dr. Hale's first communication on the subject is to be found in the

Medical Communications of the Massachusetts Medical Society, vol. v., 1830; and his second, in the *American Journal of the Medical Sciences*, April, 1842. Dr. Backus' article in the latter, January No., 1841. We have not seen the original contributions, but the substance of them, as set forth in the articles styled "*Stomatitis Nutricum*," by Dr. Bell; and "*Sore Mouth of Nursing Women*," by Dr. Wood, which are the sources of this analysis of Drs. Hale and Backus' views, and which for reasons that will be obvious shortly, we feel it to be particularly incumbent on us to carefully reflect.

According to Bell and Wood's works on Practice, then, the incursion of the disease is sometimes sudden, and the local affection of the mouth is characterized by loss of taste, scalding sensations, patches of painful pimples on the sides of the tongue and mouth, which after a time ulcerate, and produce very painful sores, with hard elevated edges, and an inflamed circle around them. The inflammation, as the disease progresses, extends over the mouth by means of successive crops or patches of these papillæ; the surfaces of the mouth become exquisitely tender; the taking of food and drinks causes much pain; and a copious salivation sets in. This *local* disease, as it is considered, is not at first attended by febrile symptoms, loss of appetite, or furred tongue, but on the contrary the appetite is good throughout the course of the disease, and the tongue is red and smooth; but if the disease be not arrested, ulceration extends to the fauces, œsophagus, stomach and bowels, and then great intestinal irritation and severe constitutional symptoms supervene, with diarrhœa, debility, emaciation, etc., which overwhelm the patient and often end in death. This gives a condensed outline of the symptoms as recorded in the standard works of Drs. Bell and Wood, professedly drawn from the contributions of Drs. Hale and Backus. Dr. Hale, it is stated, has seen considerable loss of the substance of the tongue by sloughs; and Dr. Backus has noticed so sudden an attack that, "in three hours' time after seeing your patient in health, you may find her with a scalded tongue and fauces, and unable to converse or take food."

The cause of the disease is ascribed to some unknown baneful influence, exerted on the system by nursing.

The subjects are wholly women in the suckling condition; or if pregnant women are attacked, they are those who had had the disease previously while suckling, and had established a predisposition to it. It is very apt to recur in subsequent nursings if a woman has once had it.

The constitutions most liable to it are the leuco-phlegmatic and dyspeptic, which are habitually costive; but others, even the most robust, are sometimes its victims. It appears to be much more prevalent in some localities than others.

The prognosis is generally favorable, if the constitutional symptoms of exhaustion have not run too long; and it is chiefly where there is a predisposition to phthisis that alarm need be felt, and the child weaned. Notwithstanding the wasting and weakness of the mother, the secretion of milk holds out, and the child continues vigorous and healthy.

The treatment is rested mainly on tonics, laxatives, *lemon-juice and bicarbonate of potash* in effervescing draughts, *tartaric acid* in small beer, and porter, with nourishing diet; at least this is Dr. Hale's treatment, and very little value is attached by him to local treatment. Dr. Backus recommends chalybeates combined with laxatives. The nitrate of silver is recommended as a local application. Weaning the child is thought to be an effectual measure.

Remarks.—The above is a faithful abstract of the accounts given of this affection, by Drs. Bell and Wood, drawn from the contributions of Drs. Hale and Backus; and no one, we presume, will question the identity of the disease with that described by Drs. McGugin, J. P. Hall, Marshall Hall, Ellsworth, and Judkins. The several descriptions all comport in the main. There is nothing particularly important in the descriptions of the affection as drawn from Bell and Wood, over and above that of others, on which we can rest a point, save in the treatment, viz.: that *lemon-juice, tartaric acid* and *a salt of potash* are effectual remedies.

To post up the several points made in our researches, by way of keeping the mind refreshed, we find we have made the following, viz.: 1. The nursing sore mouth is not an affection peculiar to nursing women. 2. It manifests itself epidemically after cold protracted winters. 3. Males are sometimes

its subjects. 4. The local lesions are secondary. 5. The vegetable acids and salts of potash are effectual remedies. These points we think are clearly established, to say nothing of the balance of the testimony, all tending in the same direction, and, as we think, conclusively proving that this anomalous affection, which has been stumbled over by the profession in Europe and America for the last thirty years, is nothing more or less than LAND SCURVY. This has been our conviction for many years, since 1835, when we first encountered it, and met it successfully with anti-scorbutics. In 1851 we reported sundry cases of it successfully treated on this plan, in the *New York Journal of Medicine*, and presumed it was only necessary to call attention to its *real and true nature* to have the matter fully appreciated. We there remarked as follows: "These cases are reported because of their practical bearing. Marvellous accounts of this non-descript disease, called 'nursing sore mouth,' appear from time to time in the journals; and why some one has not set its nature and pathology to rights, who is in the habit of contributing to, and fond of appearing in the journals, I am at a loss to understand." But it seems "we reckoned without our host," for Dr. Wood still adheres to opposite conclusions, which are being widely disseminated. He closes his article on "*Sore Mouth of Nursing Women*," with an allusion to our views as follows: "Dr. M. L. Knapp, formerly Professor of Materia Medica in the University of Iowa, considers this disease as essentially scorbutic; and has treated cases on this principle successfully, which have come under his notice; but the affection, as described by Drs. Hale and Backus, has not the peculiar features of scurvy, and differs probably from that noticed by Doctor Knapp."

Now our object in elaborating this subject is to arrive at the truth. Dr. Wood is a prominent author, his opinions have deservedly much weight, and as we are at issue on a question of fact, as to whether or not the affection described by Drs. Hale and Backus presents the peculiar features of scurvy, we invite a careful attention to the subject. If a scalded, drivelling sore mouth in female subjects, exhausted and prostrated by breeding and nursing, displaying increasing patches of ul-

ceration of the mouth, tongue, fauces, and extending to the bowels and bringing on diarrhœa, profuse salivation and complete prostration of the system, development of grave and complex constitutional symptoms and local lesions—if these phenomena do not present the leading "peculiar features" of land scurvy, we ask what symptoms do? and if lemon-juice, tartaric accid, and a salt of potash prove effectual remedies, what then? We are not ambitious to "shiver a lance" with Dr. Wood; but nevertheless, as our views are crowded to the side of error by him, in the diagnosis of a disease in which we have had much experience at the bed-side and he none, we owe it to medical science and humanity, to endeavor to right ourself, and stay the promulgation from so high authority of so absurd a medical philosophy as teaches that this is a *new disease;* that it is *peculiar to nursing women;* that it is caused by some *unknown baneful influence exerted on the system by nursing, etc., etc.;* and that denies that *soreness of the mouth in a suckling woman, anæmia, prostration, salivation and diarrhœa*, present the "peculiar features" of scurvy; and while, in the same breath, it discloses, though unwittingly, the proofs of the affirmative, to wit:—*lemon-juice, tartaric acid and a salt of potash* are reliable remedies!

Dr. Channing's Article.—In the *New England Quarterly Journal of Medicine and Surgery*, for October, 1842, is an article on this affection, with cases, which is epitomized in the *Maryland Medical and Surgical Journal* for December of the same year, as follows:—"*Notes on Anhæmia, principally in its Connections with the Puerperal State*, by W. Channing, M. D." The cases detailed in this article are quite interesting, and seem to demonstrate the existence of some pathological condition other than the loss of blood, producing the condition which Dr. C. thinks is improperly called *anhæmia.* He ventures to suggest, and sustains his suggestions with great plausibility, that this pathological condition consists, if not entirely, at least in great part, in the subversion of the functions of the capillary system, by which the blood passes from the arteries to the veins, without undergoing its usual changes. The symptoms of this condition are a brilliant whiteness, smooth-

ness, roundness, dryness and warmth of the surface every where; the blanched lips, mouth, tongue; the scarcity of external or subcutaneous veins, and the bright pink color of their contents, with the want of the roundness in these vessels, which results from fullness; various noises in the head, the mind in various states, but generally having a serene anticipation of death. There is tumultuous action of the heart. Dr. Channing, sustained by his cases, infers a close connection between the puerperal state and this morbid condition, and in such a connection the disease is most fatal. The cause of the disease being so obscure as it is, the treatment is necessarily undefined, and can only answer obvious indications. Dr. C. suggests as an inquiry, what might be the effect of transfusion?"

Remarks.—The 'puerperal anæmia' of Dr. Channing is evidently the 'serious affection' of Dr. Hall, and the 'nursing sore mouth' of other contributors. Doubtless also it is the 'hydræmia gravidarum' and 'endangium out of order' of Dr. Meigs, and the 'leucocythemia' of Dr. Bennett. There is something behind the scene in the pathology of all these watery blooded cases, with a powerless fibre, palpitating heart, panting respiration, and a brain looking with serene anticipations on death, that stamp them as more than simply *anæmia*, or loss of blood, as Dr. Channing says, and we fully agree with him that the affection is improperly called anæmia: it is the scorbutic diathesis developed in various degrees and in various ways, and sometimes in delicate females by improper restrictions in diet under medical direction. The materials for healthy blood have been withheld from the dietary, or the organs of digestion so deranged that nutrition and assimilation have become starved of their rights. It appears idle to us to look for the cause of the difficulty in some unknown, mysterious disturbance of the functions of the capillaries, as Dr. Channing suggests, or in the endangium as Dr. Meigs conceives, or in the spleen as Dr. Bennett argues. No doubt the capillaries, the blood membrane, and the spleen are all at fault, and suffer from impoverished blood. All the solids are equally as hydræmic, or leucocythemic, as the blood itself; hence the softening of glandular

structures, and local lesions of the tissues. Where the causes and the coöperating causes are acting powerfully, as in a delicate breeding woman, who has suffered in the earlier months of her pregnancy from morning sickness, and in the latter months from heart-burn, and who has been dieted on tea and toast, ulcers of the mouth should break out before delivery; but under more favorable circumstances there may be no local lesions, and yet very marked constitutional derangement. We have met with cases of years' standing where there were no ulcers of the mouth, only a lividity of its tissues, without salivation, even; and we have known cases of the affection to terminate fatally where soreness of the mouth was not complained of at all.

This leucocythemial, or white cell blood diathesis, is particularly prevalent in malarious districts. We have seen much of it under such circumstances in both sexes. It is much more frequently met with, however, in females, from the chlorotic girl to the suckling mother, than in males, as the victims of land scurvy are "principally women." (*Good.*) Iron alone is not a sufficient remedy, though we agree with Dr. Meigs (Letters to his Class *On Woman and her Diseases,*) that it is a good one; but all the elements of a healthy nutrition, as furnished in the "good rich diet" advised by Dr. Judkins, and the "nourishing jellies and soups" recommended by Dr. McGugin, together with the acidulated drinks of Dr. Hale, must be judiciously brought to bear upon these cases, aided by tonics, and a correct hygiene; which being found effectual, proves our views of the nature of the malady correct.

Dr. Channing infers a connection between the puerperal state and this morbid condition, in which connection the disease is most fatal. Others have inferred its connection only with the latter period of lactation; but we have seen that it is also associated with gestation, and furthermore, that it is often the inheritance of infancy. The majority of infants at the breasts of mothers laboring under it, imbibe it. This we have verified over and over again, during the last twenty years, by the success of the lemon-juice treatment. We have rescued hundreds of puny, suckling infants, covered with

indolent biles, or wasting under diarrhœa, simply by the administration of lemon-juice to the mothers, and throwing away the blue pill mass, etc., with which they were being drugged. Now the records of scorbutus show that infants imbibe the diathesis from the impoverished materials afforded by the milk of mothers laboring under it. And who so blind as not to see the identity? But let us briefly trace this infantile inheritance from nursing sore mouth or scorbutic mothers. If the infants live to be weaned, thousands upon thousands of them perish of cholera infantum during their second year. If some of them reach puberty, the vis vitæ is too feeble, and green-sickness sets in, and ends in the local lesion of tuberculosis. If chlorosis be averted by chalybeates and a proper hygiene, still the leuco-phlegmatic constitution is formed in the girl, as her lax solids and palid countenance, leucorrhœa, falling of the womb, and tendency to local lesions of the os, import; and when this victim becomes a mother, nursing sore mouth sets in as a matter of course. Our philosophy, then, goes further back than simply to note that the leuco-phlegmatic constitution is the one for ever liable to nursing sore mouth; it explains the *cause* of this constitution, lifts the curtain and gives us a peep behind the scene.

Dr. Shanks' Article.—This article, "*On Endemic Sore Mouth, and Diarrhœa peculiar to Nursing Women*, by Lewis Shanks, M. D., of Memphis, Tennessee," we find epitomized in the December number of the *Maryland Medical and Surgical Journal*, December, 1842, drawn from the *American Journal of the Medical Sciences*, October, 1842, as follows: "In the treatment of this malady, when it occurs in the last months of gestation, as it sometimes does, Dr. S. relieves the excitement in the robust and plethoric by bleeding, followed by alteratives and laxatives, such as blue mass, calcined magnesia, and rhubarb in small doses; in those of feebler health, in whom there is little or no feverish excitement, he prescribes, as a tonic and alterative laxative, a combination of blue mass, ipecac, carb. of iron, rhubarb and aloes in proportions to suit each case. Ipecac alone, in doses of from one half to two grains, is a good remedy.

'During nursing, when the disease becomes chronic and is attended with diarrhœa and emaciation, a course of alteratives and a rigid attention to diet are indispensable. In some bad cases a solution of arsenic and corrosive sublimate, containing of each a sixteenth of a grain for a dose, given two or three times a day, with a diet and drink of soda with barley water, or of wine and water and milk, has succeeded better with Dr. S. than any other course he has tried. As a wash for the mouth, the infusion of sanguinaria is recommended by him. Weaning the child is indispensable in grave cases attended with much emaciation and nervous irritation. In a description of this disease as it occurred at Rochester, N. Y., Dr. Backus says, the onset is often sudden and the bowels always constipated; and the most successful treatment is with alteratives and laxatives combined; but at Memphis, Tennessee, it comes on gradually and in its well-marked chronic form, which never occurs except during lactation, the constant diarrhœa excludes the use of purgatives or laxatives. In the same city, and in the level alluvial country near it. constipation is rare either in health or disease."

Dr. Taylor's Article.—We find an epitome of this also in the *Maryland Medical and Surgical Journal*, March, 1843, drawn from the January number, same year, of the *American Journal of Medical Sciences.* It is entitled "*Remarks on a Species of Sore Mouth peculiar to Nursing Women;* by B. W. Taylor, of Monticello, Florida. 'After having tried various tonics, vegetable and mineral, and laxatives, with only partial success, Dr. T. has found that equal parts of sulphur and cream of tartar in broken doses, to keep the bowels open, constitute the best treatment as regards internal remedies. It appears to have almost a specific influence over this disease. The best external application he thinks is borax. He has also derived great benefit from a weak solution of nitrate of silver. In cases attended with considerable exhaustion, the sulphur and cream of tartar should only be used to the extent of obviating costiveness, if it exist; and tonics, such as iron, chinchona, and elixir vitriol should be given. Porter is also advised. Should the case be complicated with diarrhœa, opiates should be given, with mucilaginous drinks and farinaceous diet. In cases that

prove refractory, wean the child, when a speedy cure will take place."

Remarks.—This article furnishes further proofs of the efficacy of the salts of potash and soda in this disease.

Dr. Ware's Article.—In the *American Jour. Med. Sciences*, 1849, is a brief article on "*Nursing Sore Mouth*, by J. YALE WARE, M. D., of Massachusetts," stating that the affection is rapidly on the increase in that locality. No symptoms or cases are given, but Griffith's myrrh mixture is recommended as an infallible remedy. Nitrate of silver as a gargle is also advised, of the strength of two grains to an ounce of water, and a teaspoonful to be swallowed three times a day if soreness extends to the stomach. It is believed if this course is pursued weaning need not be resorted to.

Dr. Holt's Article.—A brief article appeared in the *New York Jour. Med.*, in May, 1848, from the pen of HENRY. D. HOLT, M. D., of New York, recommending the hydriodate of potash in five-grain doses three times a day, given in the compound decoction of sarsaparilla. This had proved effectual in sundry obstinate cases. The doctor says, "without propounding any theory of the pathology of the disease, or modus operandi of the medicine, I feel persuaded that the one is as near being a specific for the other as can well be conceived."

Dr. King's Article.—This article of Prof. JOHN KING, M. D., of Cincinnati, appeared in the *Eclec. Med. Jour.*, April, 1852, and although it gives a similar account of the disease to that which may be found in Bell or Wood, presents nothing particularly new in the history or treatment, except that it is stated there *is always a dry, inactive state of the skin*, for which alkaline washes and the spirit vapor bath are recommended. And we take leave to add, that the skin is always *scurfy*, oftentimes sprinkled with *petechiæ*, and in some instances of extreme prostration we have seen *vibices*.

Thus much for the history and literature of the affection, embodying the present state of medical knowledge on the subject. Some few other papers giving an account of the affec-

tion have appeared, we believe; but, so far as we have been able to learn, the disease has never been suspected of being of scorbutic character by any contributor save ourself. We are not able to say what the impressions may now be on the mind of the profession, after an examination of the literature of the affection with the key of explanation offered by us, nor are we anxious at all about the matter further than the interests of science and humanity are concerned. Indeed we would rather regret to have proselyted many to our views in this early stage of our inquiry, lest interest in the subject flag, and would rather invite a suspension of opinion until we shall have pushed our inquiry through its several chapters. A question in practical medicine as important as this, deserves to be well and carefully considered, and all opinions sifted before final conclusions be drawn. This chapter is but preparatory—the collated views of others. If after our researches shall have been completed, it turns out to be the general sense of the profession that the nursing sore mouth affection is a *new disease*, then let it be retained in Wood, and in Stokes and Bell, and inserted in other standard authors; but if it be proved to be *scurvy*, let us study that disease instead, which, we think, has been culpably overlooked of late years.

Doubtless the same liability exists in the human constitution, to take on the scorbutic diathesis, that has existed since the days of Hippocrates, by whom it was first described, and that existed in all time before, and that will always exist to the end of time, under a faulty alimentation or a meagre supply of proper materials for forming healthy blood, perverted digestion, and obstructed aeration.

This faulty condition, no doubt, obtains to a very considerable extent in the present state of society and modes of life, even under our improved notions of the etiology of scurvy and the more general attention paid now-a-days to gardening and fruit culture The poor inhabitants of cities, who are compelled by necessity to the daily infraction of the laws of a healthy dietary, are thereby rendered more or less scorbutic unquestionably, a standing cause of the aggravation of all their diseases, and of the vast amount of infantile mortality in our large cities. and we shall show conclusively, before we

finish these researches, that the rich and high-born are frequently rendered the victims of scorbutus by mistaken notions as to what constitutes a proper and wholesome dietary; in other words, that restrictions in diet together with sedentary habits inlay the scorbutic diathesis in the systems of many a breeding woman in high life.

ADDITIONAL CONTRIBUTIONS.

Dr. Brainard's Article.—In the *North Western Medical and Surgical Journal*, November, 1849, is an article "by Daniel Brainard, M. D., Professor of Surgery in Rush Medical College." It is brief, so we give it entire.

"The 'nursing sore mouth' is a disease which has only of late attracted the notice of medical writers; yet its pathology and treatment have been investigated with zeal, if not with entire success. It is certainly surprising that such an affection should so long have escaped the notice of observers, if it existed; and equally strange, it may appear, that it should have originated in these latter times. We are inclined to the latter opinion, and suppose that it is on the increase, both as regards its frequency and its severity. These ulcerations, however, are to be regarded only as a local effect of a general cause, which does not by any means confine its influence to the mucous membrane of the mouth, but which almost as often produces similar effects on the vaginal surface, and apparently on that of the small intestines.

The state of the system which gives rise to these ulcerations is anæmia. Those who have been bled often, or confined to a low diet, or affected with diarrhœa, or frequently purged, are the persons affected. It is usually attended by a leucophlegmatic state, pallor of all the tissues, costiveness or diarrhœa and frequent desire to urinate, with smarting pain on urination. In the Western States the diarrhœa usually attacks persons recently arrived from the Eastern States or foreign countries, and is often persistent, and even dangerous. Women in the states of gestation, or nursing, who labor under this affection, are generally attacked with these mucous ulcerations.

The causes of the disease have been already stated to be in general those of a debilitating nature. Lactation, when prolonged, and accompanied by an insufficient nourishment, is by far the most frequent, hence its name, 'nursing sore mouth.'

The treatment most effectual, verifies this view of the cause, A general course of tonics, with nourishing and abundant food, with free exercise in the open air, seldom fail to afford relief. Good beer, ale or porter, with beef and mutton, are the best articles to employ. Iron, and the Vegetable Bitters are of some service, particularly the former. As a local application to the ulcerations of the mouth, no remedy deserves to be compared to the fuming Muriatic Acid, applied with a probe, piece of wood, or brush, to the ulcerated surface; it never fails to relieve when the ulcers are white and circumscribed. When there is a diffused redness and denudation, it should be diluted and used as a wash. Mercurials are especially to be avoided.

To illustrate these brief and very imperfect remarks, I will add some cases which may be taken as specimens of the different forms in which it appears.

Case I.—Mrs. A., a young woman of scrofulous habit and delicate constitution, was affected while pregnant with her first child, with ulcers of the mouth, for which she made use of astringent applications. After using these the mouth was cured; but ulcerations of a very severe kind attacked the genital organs, there being several deep and whitish ulcerated patches about the orifice of the urethra and vagina, which produced great pain and smarting on urination, and pain in the hip, groin, and extending down the thighs. There was considerable constitutional irritation which soon became severe. Local applications had little effect, and the ulcerations continued till delivery, when they disappeared and the mouth became affected, continuing with varying degrees of intensity during the whole period of lactation. At the second pregnancy and lactation, the disease reappeared in so severe a form as to endanger her life and *render necessary the induction of premature labour*, when it again ceased and attacked her mouth."

["Render necessary the induction of premature labor!" We

have put the sentence in italics, in order to impress the reader with a due sense of the importance of understanding the true nature of the disease and rational treatment, and dissuade him from following such a precedent.]

"Case II.—Mrs. C., a young woman of delicate constitution, had, during pregnancy and lactation with her first children ulcers of the mouth. During the pregnancy and lactation, with the third child, it recurred, and was treated by the application of strong Muriatic Acid. This immediately cured the ulcers, but similar spots made their appearance about the orifice of the vagina, occasioning great smarting, with pain in the hip and groin of the side most affected. This appearance of ulcers of the mouth at different times, was attended with great relief to the other symptoms, but on their healing, the ulcers of the vagina were again seen with their attendant effects.

"Case III.—A woman of about 35 years of age had been affected for a long time with a pain in the back, hips, etc., for which various remedies had been used without effect. On enquiry I found the symptoms dated from the period of lactation, and were attended with debility. On examination, several minute points were seen about the orifice of the vagina, scarcely perceptible to the eye, but which when the surface was touched with a solution of Lunar Caustic turned white, revealing the existence of numerous ulcerated points. The appearance of minute red points upon the mucous surface, of a pale color, I have seen in other cases, and it is well calculated to deceive unless a solution of Nit. Arg. of the strength of about 20 grs. to the oz. is passed on the surface. That is the form of application preferred for this situation, the Muriatic Acid being too severe. It were easy to add to these cases, others, where the ulceration of the mouth alternated with diarrhœa, indicating a transfer of the ulceration from the intestinal mucous membrane to that of the mouth, and the reverse. But we are content with simply inviting the attention of the profession to certain relations of these affections, in order that the same connexion may be observed if it occurs elsewhere."

Remarks.—If the reader will recur to our remarks under

Dr. Channing's Article, page 192, he will find them sustained by Dr. Brainard's views and cases. The local lesions of the genital system, and leuco-phlegmatic constitution, which we there ascribe to *scorbutus*, are illustrated by Dr. Brainard's cases. The local lesions of the mouth, vagina, os uteri, intestines and pulmonary mucous tissues, can only be viewed as "local effects of a general cause;" and together with the "scrofulous habit," "delicate constitution," "insufficient nourishment," etc., as well as the successful treatment, "tonics with nourishing and abundant food," etc., all declare the scorbutic pathology of the affection, which the doctor overlooks, and thinks the disease has "originated in these latter times!" The changing seat of the ulceration has been noticed by others—wherever irritation preponderates disintegration follows. Ulceration or disintegration is the great law of scorbutus, while nature is all the time trying to heal.

Prof. Simpson's Article.—The following, which we find in the *Boston Medical and Surgical Journal*, May 1855, extracted we suppose, from the Edinburgh Monthly, shows that Prof. Simpson has been studying the morbid anatomy of the nursing sore mouth affection for some years, under the new-fangled name of:

"CHRONIC PELLICULAR OR ERUPTIVE INFLAMMATION OF THE INTESTINAL MUCOUS MEMBRANE."

[PROF. SIMPSON makes the following remarks on this form of intestinal inflammation, in addition to some observations published by him in 1846, on the same subject, in the Edinburgh Monthly Journal. These additional remarks have not before been published]. *(Boston Ed.)*

"Since specially pointing out this disease some years ago, to the notice of my professional brethren in Edinburgh, its frequency in practice has become generally recognized among us; and all, I believe, are now willing to acknowledge that it is infinitely more common than the total, or almost total, silence on the subject of all our best writers on practical medicine would, *a priori*, lead us to infer.

"*Acute* exanthematous eruptions—small-pox, measles, scarlatina, erysipelas, &c.—are usually recognized as occasionally attacking some parts of the mucous surface, as well as the general cutaneous surface of the body. And there are some specific local inflammations of the mucous membrane, which, if present on the skin, would no doubt there be termed eruptions—as diptherite, dothinenterite, and perhaps more than one form of diarrhœa and dysentery, &c.

"*Chronic* eruptions, however, of the intestinal and other mucous membranes of the body, have scarcely been acknowledged in modern pathology. But perhaps such chronic eruptions and irritations of the mucous surface will yet be found to be scarcely less frequent or less various in type than the well-known chronic eruptions and irritations of the cutaneous surface. [A good time is coming for clairvoyants].

"Chronic eruptive inflammations of the intestinal mucous membrane are frequently attended, as stated in the preceding notice, with the ejection, in greater or less quantity, of shreds or pellicles of thickened mucus, or of actual coagulable lymph, along with the usual contents of the bowels; and sometimes this pellicular effusion presents the appearance of a gelatinous shapeless mass, or portions of a roundish or tubular false membrane, which is frequently considered by the patient as "worms." Often, however, in apparently other species of chronic mucous or intestinal eruptions, no such secretion is thrown off.

"The pathological anatomy of these morbid eruptions of the mucous membrane has scarcely yet been at all studied on the dead body. In a case where, some months before death from pulmonary tubercular disease, the patient had passed large quantities of "membranous crusts or tubes" from the bowels, Dr. Abercrombie found the mucous membrane of the colon, throughout its whole extent, covered with an immense number of small spots of a clear white color, which, "on minute examination, were distinctly ascertained to be vesicles, very little elevated, but when punctured, discharging a small quantity of clear fluid. [Precisely as in Asiatic cholera]. In a case of still more chronic character, with similar pellicular discharges, which I attended with the late Dr. Wright,

and where the patient died in an extreme state of marasmus. the mucous membrane of the colon and the lower portion of the small intestine was everywhere studded with a thickly-set papular eruption.

[The "pellicular discharges" here spoken of are found in the intestines of those who have died of Asiatic cholera. Masses of cast off epithelium—the "thickly set papular eruption" also, or thousands of little blisters. These little particles of epithelium are the *floating floculi* seen in the rice water discharges of cholera, and noticed also by Dr. Judkins in the diarrhœa of nursing sore mouth. Dr. Dewees also noticed this vessicular eruption *on the skin* in cholera infantum.]

"The principal general symptoms which I have observed in cases of chronic mucous or intestinal eruption, are the following, in different numbers and combinations, and in different degrees of severity in different patients:—

"General indefinable debility and emaciation; a condition often of broken and impaired health, without any very appreciable cause; the muscular system easily fatigued and exhausted; sometimes so much palpitation as to lead to the idea of heart disease; the circulation weak, as shown by the coldness of the extremities, &c.; [the constitutional symptoms of nursing sore mouth] diminution of nervous and mental power and energy, with hypochondriasis, irritability of temper, very often impairment of the memory, sensations of prickling and semi-paralysis in the arms or legs, and sometimes lesions of sense; skin very generally dry and inactive, and in some cases eruptions appear upon it, cotemporaneous with, or vicarious of, the internal mucous irritation [as in scurvy]. The appetite, provided the mucous membrane of the stomach itself is unaffected, may be found scarcely, if at all diminished, but the patient complains of the food swallowed not producing any corresponding amount of strength or nourishment; [precisely as in scurvy] occasionally, again, there is marked dyspepsia; often, but by no means constantly, there is a feeling of heat and rawness, in some part of the intestinal canal, and a feeling of uneasiness and distension rather than pain, in the abdomen; the action of the bowels is sometimes comparatively normal or easily regulated, but they vary in other instances,

both as to torpidity and irritability, [as in scurvy]. The sleep is usually unrefreshing in its proportion to amount.

"Direct evidence of the presence of, and tendency to, mucous eruptions in such subjects, can generally be obtained by carefully examining the state of the mucous membrane that is within sight. Spots of eruption, and sometimes small ulcerations left by them, will frequently be detected on the inside of the lips and cheeks, and on the gums and tongue, [precisely as in nursing sore mouth]. Much more frequently the palate and throat present, more or less distinctly, the appearances of chronic eruptive disease; as likewise the mucous membrane of the nose. The tongue, with the mucous membrane lining the cheeks, is not unfrequently so swollen as to be marked and indented by the impression of the teeth. Sometimes, when thus enlarged, the tongue is whiter than usual; but in other cases we see it red and irritable; and, more rarely, one or more distinct and broad patches of eruption are seen on its surface, [as in nursing sore mouth]. The mucous membrane of the mouth and throat seems often, in such cases, to be the seat of successive new crops of eruption; and the variation in the general symptoms of the patient would appear further to show that such is also probably the history of the disease on its more internal sites; those successive re-aggravations being sometimes accompanied by a slight degree of chronic feverishness, [ditto in nursing sore mouth]. Sometimes there is a kind of daily periodicity in the morbid sufferings and feelings of the patient. [No better description of the objective signs in the nursing sore mouth affection has been given].

"The general principles of treatment are, as already stated, the same as those used in chronic skin eruptions.

"The affection—particularly in its occasional periods of aggravation—is allayed by the use of lime or Carrara water, by aqua potassæ, by subnitrate of bismuth, by doses of nitrate or oxide of silver, or of oxalate or nitrate of cerium; by bitter infusions, as that of quassia, with the addition of two or three drops of medicinal prussic acid; by the cold infusion of Virginian cherry bark, &c. But these medicines act perhaps principally as local sedatives to the diseased mucous surface.

"As curative constitutional remedies in this affection, I

have seen most advantage from the salts of cerium, from the use of pitch pills, or capsules of tar, and from the preparations of arsenic. [Bishop Berkley, was it, who wrote a treatise showing that tar water was a most valuable antiscorbutic].

"The preparations of pitch or tar have always seemed to me most useful when they produced their characteristic scarlatinoid eruption on the skin.

"But most reliance ought, so far as I am able to judge, to be placed on small and very long-continued doses of arsenic, as two drops of Fowler's solution, or a pill containing the sixtieth of a grain of arsenite of potass, taken three or four times a-day, [a potash salt but a very bad one]. Either preparation should be taken with or after meals; and it is, I believe, infinitely better and safer to trust to the curative effect of the long continuance of such small doses of this remedy, than to arrive at the same result by throwing in larger doses for the same period.

"After a length of time, and when the general symptoms are much abated, a more direct tonic, as quinine or iron, may be added to the cerium, pitch or arsenic. But at first all tonic remedies appear to be entirely useless, or to lead even to the aggravation of the morbid state of the patient.

"The diet requires to be regulated by the usual rules applicable to dyspepsia. But animal food, in a concentrated form, is often required to sustain the strength, provided it does not irritate. Wine or stimulants very seldom are of benefit. The state of emaciation is sometimes improved by food containing large quantities of fat, as cream, butter, olive and cod-liver oil, &c. When the patient's stomach will not bear or digest such fatty matters, I have seen the daily inunction of two or three ounces of warm olive oil, into the general surface of the skin, followed by the very best effects upon the health and strength of the patient.

"Most remedies will fail to produce a permanent remedial effect, unless the state of the skin be attended to, and its healthy condition restored by frequent sponging with warm water, or with warm stimulating lotions.

"Lastly, external counter-irritation over the abdomen seems to be an auxiliary means of almost indispensable necessity.

A mustard poultice every night at bed-time forms one of the best and simplest means of effecting it; or external counter-irritation with stimulating liniments, or with croton oil, or antimonial ointment, or a strong tincture of iodine, &c., may be used to fulfil this important indication.

"From the nature of my practice, I have seen the disease far more frequently in the female sex, and often in patients suffering under obstinate leucorrhœa, vaginal eruptions, and other uterine diseases. [Exactly so]. But it also often occurs in the male subject, [so says Dr. Marshall Hall also, and so say we], and especially, as it has appeared to me, in men who, like clergymen and others, are subjected to an unusual amount of intellectual work or mental anxiety.—(*April*, 1855.)"

Remarks.—The above is a rich contribution to the literature of the nursing sore mouth affection. Dr. Simpson's first paper on this anomalous affection, was written, it appears, in 1846, during the pestilential years of the Irish famine, potato blight, and scurvy epidemics. No better evidence than this is needed to prove the disease of scorbutic character. Every body knows that these water-blisters of the mucous tissues, are among the first local manifestations of scurvy. Later in the disease or under greater deprivation of proper food, they appear in blood-blisters, or petechiæ, first on the mucous tissues, and finally on the skin.

To what a refinement of "pellicular" sublimity the profession has arrived in the science of Nosology.

Dr. Byford's Article.—A well written paper on the Nursing Sore Mouth affection is contained in the April No., 1853, of the American Journal of the Medical Sciences. This article, "*On Stomatitis Materna*" as it is styled, "by Wm. H. Byford, M. D., Prof. of Theory and Practice of Medicine, in Evansville Medical College," takes a clever view, in the main, of the subject, without revealing, however, anything new, as to the true nature of the affection. The Dr. has so faithfully epitomized his views at the conclusion of the paper, or embodied the results of his experience and reflections on this grave malady with so much clearness in so concise a manner, that we

can serve our readers no better than to give them entire; after premising that the doctor must have treated many, and some very aggravated cases. He speaks of having seen the tongue half amputated by ulceration, and permanently distorted; and says that several occurred in women pregnant with their first child, continuing through the remaining period of gestation and lactation; and judges that the anæmic condition productive of such grave local lesions must be peculiar. It is very evident the doctor considers it a blood disease, a lesion of nutrition, rather than a local affection; but we will let him speak for himself the sum of his conclusions:

"1st. It is a disease of pregnancy and lactation, more frequently appearing while the patient is in the discharge of the last named function, especially should it be the first child. Certainly, however, often making its appearance during pregnancy with the first child.

"2d. The condition of blood probably gives origin to the local manifestation of the disease. This condition of the blood may arise from the abstraction to too large an extent compatible with the health of the mother's system, of such principle or principles as may be necessary for the support of the child, either through the placenta or the mammæ, depraved digestion and assimilation, and other depressing circumstances connected with certain epidemic visitations and endemic tendencies.

"3d. The local symptoms are irregularly paroxysmal.

"4th. It makes its appearance in three distinct forms, viz: erythematous, vessicular, and ulcerative inflammation of some part of the mouth. The former two generally covering the whole internal surface of the mouth; the latter usually confined to the tongue.

"5th. The first two varieties are migratory, spreading in different cases to all the mucous membrane continuous with the cavity of the mouth; such as that lining the air passages, the lungs, the digestive surface, the cells and cavities of the cranium, maxilliary, nasal sinuses, &c.; thus producing consequences varying in gravity and other characteristics with the constitutional tendency of the patient and the amount and seat of the inflammation set up on these surfaces.

"6th. The prognosis is doubtful even in cases that seem favorable, from the complications that may arise by its spreading character.

"7th. That in cases of gravity, medicine will avail but little without a change of residence or nursing, or both.

"8th. Cod-liver oil and tonics, especially the ferruginous, and nutritious diet, are the main hope of success in the simple form. The complicated, of course, will demand remedies suited to the circumstance at the time, and calculated for the same diseases when produced from other causes.

"9th. Local remedies are merely palliative."

Remarks.—Let the reader bear in mind the fact that *scurvy* is an impoverished condition of the blood, of every degree, with tendencies in proportion to produce local lesions, the mucous tissues first yielding, and the phenomena in Dr. Byford's cases are explained, even to the paroxysmal exacerbations of the soreness of the mouth, indigestion, diarrhœa, &c., and the main chance from cod-liver oil, tonics and nutricious diet.

The topography of Indiana is highly favorable to scurvy, as well as Illinois, which will be rendered apparent in our next chapter, and this will account for the frequency and aggravated forms of "Stomatitis Materna" met with there. How completely the medical mind has lost sight of all forms of the scurvy!

Dr. Hutchinson's Article.—"Stomatitis Materna.—A Dissertation read before the Hendricks County Medical Society, Ind.—By David Hutchinson, M. D." (*Western Lancet, April*, 1855.) Although this paper of 23 pages contains but little, that is new, yet it is valuable as confirming the observations of others. We will not take the trouble to give a synopsis of this long paper, but simply cut out the most pithy portions as extracts. The author says:

"It would be fortunate if the disease would confine its ravages to the mucous membrane of the mouth, fauces and œsophagus; but we find that it attacks all the mucous surfaces of the body, and produces inflammation and ulceration in organs important to the continuance of life, travels through the whole extent of the alimentary canal and produces ulcerations of its

coats; seizes on the mucous membrane of the larynx, trachea, and bronchiæ, and awakens into action fatal disease of these organs, and of the lungs; follows the nasal passages into the different cavaties of the skull and maxillary antrum, and induces permanent inflammation there. It has been known to travel through the eustachian tubes to the cavity of the tympanum, and thence to the mastoid cells. It also attacks the mucous surfaces of the vagina. Two of my cases had ulcerations of the vagina, being of such a distressing character that they urgently demanded relief, occasioning much pain and smarting during urination, and it is to be regretted that this affection ever got the name of stomatitis, as the affection of the mouth is but one of the pathological conditions that obtains. * * * * * *

"We have seen one case, in which ulcers in the mouth, diarrhœa, and vaginal ulcerations followed each other in alternate succession. But it is to be remarked, that when they leave the mouth and attack another portion of the mucous membrane, there is no improvement of the general health; and consequently, it shows that a cause of a general pathological character exists. * * * * *

"In addition to these local symptoms, (for they are but local effects of a constitutional cause,) derangement of the digestive and assimilating organs claim priority. Though the sore mouth is usually the first symptom that attracts the attention of the patient—for it often comes up very suddenly—yet derangement of the stomach and bowels always, to a greater or less extent, exists for some time before the occurrence of the buccal ulcerations; and the greater the gastric derangement, the more extensive and difficult to heal are the ulcerations of the mouth. The patient is much troubled with flatulent and acid eructations, a sense of weakness, burning and oppression at the epigastrium; frequently has to loosen her dress, to alleviate the feeling of distension; has slight febrile irritation of an evening, of a hectic or asthenic character. It appears that everything that the patient eats, takes on the fermentative process, and there appears to be too copious a secretion of an acid fluid in the stomach. The bowels are either con-

fined or too loose; and we would readily think that the patient labored under one of the many forms of dyspepsia."

The author speaks of irritable bladder, "preventing sleep at night from frequent calls to urinate," as another symptom, that often "exists for several days before the accession of a paroxyism, either of the sore mouth or of the diarrhœa," and says he has ascertained the urine to be "above the normal specific gravity, and highly acid. These two points have been universal in all the cases examined."

We consider the following new and important, especially the sentence we have italicised.

"I procured about four ounces of the urine, which was highly acid and of high specific gravity. Under the microscope the figures of urate of ammonia in the globular form, were very numerous, but very small; *there were also fibrinous tubes and cysts of the kidneys, with epithelial scales.*"

These observations prove that the urinary branches of the mucous membrane are subject to the same blistering process as the mouth, intestines, &c., and the casting off of the epithelium—the "pellicular" disease of Prof. Simpson, in the urinary passages. The same character of eruption and cast off sloughs are among the post-mortem appearances in cholera; in the intestines, urinary passages, and lungs.

"Hence, we see from the examination of several authors, whose opportunities and abilities, were well calculated to determine the condition of the blood in pregnancy, that all coincide in their observations, that there universally exists a dimunition of the blood corpuscles, and of the solids generally, and an increase of fibrin; and although, at no very remote period, physiologists maintained the doctrine, that fibrin was essential to the development of the tissues, yet, strange as it may seem, quite a reverse doctrine is now taught, both by physiologists and pathologists. Andral and Gavaret, in their extensive researches in the comparative physiology of the blood; found that an improvement in the breed of an animal, tended always to increase the proportion of the corpuscles, and likewise to diminish the fibrin; and we find the same inverse ratio, between the fibrinousness and the perfection of the blood, in the facts; that there is little or no fibrin in the

blood of the fœtus, none in the egg of the chick, none in the chyme, and less in the blood of the carnivora (who feed on it) than in that of the herbivora. Hence, we are forced to the conclusion to which Simon comes, that we must regard the fibrin as an excrementitious product, derived from the waste of the tissues, or from the oxidation of the blood; and consequently in progress of elimination from the system.

"Instead of the blood of the mother becoming improved after parturition, it is still further impoverished by lactation; and unless the proper nutriment and medicines are introduced into the system, emaciation proceeds rapidly, and the tissues become very pale, showing a great want of blood corpuscles. We may therefore safely arrive at the conclusion, that pregnancy and lactation, and impaired digestion are the causes of stomatitis materna.

"Those who are dyspeptic, and have suffered from leucorrhea, hemorrhages, and who have the menstrual discharges while suckling, are generally the most liable. You will frequently find the patients with carious and decayed teeth, produced by the acid state of the saliva; healthy saliva is alkaline, test paper shows it to be acid in this disease."

The author speaks of tenderness and irritation of the gums, in several places, which we consider an important observation, tending to establish the scorbutic pathology of the disease.

"But, how does a poor state of the blood produce inflammation of the mucous tissues? Without stopping to theorize on this point, we answer, that we have a similar inflammation of the mucous membranes in other diseases, in which the blood is impoverished, as scrofulosis, &c., in short, there is a striking analogy in the chemical composition of the blood in these diseases, and that of pregnant women. If, then, our views of the pathology of this disease be correct, the treatment is obvious, and it is rather a consolatory circumstance, that the treatment is becoming well established. We make two prominent indications. Indication 1st. To correct and improve the digestive organs, and restore them to their normal function. Indication 2nd. To supply the blood with such nutriment and medicines, as will augment the blood corpuscles and decrease the fibrin."

In carrying out the above indications, or in Dr. Hutchinson's treatment there does not seem to be anything new. Rest, astringents and opiates; cod-liver oil, quinine, bismuth, soda, turpentine, iron; Rochelle salts if costiveness prevail; and nutrition, constitutes his curative agents. He advises animal, rather than vegetable food, because of the tendency to acidity, and thinks wheat bread, and also sugar objectionable on the same ground. Says also that, "patients do not bear vegetable acids—apples and other sub-acid fruits increasing their gastric difficulties." Now this is partly true; raw apples are difficult of digestion by weak stomachs—they should be roasted. But vegetables, acids, and fruits are what nursing sore mouth patients especially require. Tonics, and soda to correct accidity, must, together with counter irritation over the stomach, enable it to do its duty. We refer the reader to our analysis of cases.

"*Tabular statement of* 12 *cases of Stomatitis Materna, showing the direct ratio of the severity of the disease; as compared with the immature age of the individual, and the number of births, crowded into a short space of time.* By Wm. Lockhart, M. D.

Case	1	Aged	24	Years	3rd	Child	Max. Severity
"	2	"	26	"	3rd	"	" "
"	3	"	25	"	4th	"	" "
"	4	"	22	"	3rd	"	" "
"	5	"	17	"	1st	"	" "
"	6	"	21	"	1st	"	Min. "
"	7	"	25	"	4th	"	Max. "
"	8	"	23	"	3rd	"	" "
"	9	"	22	"	1st	"	Min. "
"	10	"	20	"	1st	"	" "
"	11	"	20	"	1st	"	" "
"	12	"	21	"	1st	"	" "

In four of the above cases Crural Phlebitis, was an accompaniment.

In 7 of them (all that were examined) the urine was highly acid: and in all, at some stage of the disease, severe pain was felt on passing water; doubtless on account of an excess of acid (uric or its salts urate of ammonia, or urate of soda,) such being the case in the cases tested.

In one of the cases (case 5th, aged 17 years,) the disease persisted for eight months; and during the latter part of the

term of her sickness, albumen was found in the urine, in connection with epithelial cells, altered blood globules, and uriniferous tubules."

Dr. Maris's Article.—In the May No., 1855, of the "Ohio Medical and Surgical Journal" is a paper on the "Sore Mouth of Nursing Women, (Stomatitis Materna), by GEO. W. MARIS M. D." from which we make extracts.

"The 'sore mouth of nursing women,' the name we prefer, and the most familiar one known to the profession, is manifestly a follicular inflammation, produced by impoverished blood, and consequently attended with a low grade of vascular action. * * * * * * *

"PATHOLOGY.—The local disease or "*mouth sore,*" we regard as the mere expression of a deeper, though less visible and tangible trouble, viz: *a blood disorder.* * *

"A few weeks since, we were called to see, with Prof. Dawson, a lady in her fifth month of gestation and her fourth child. We found her moribund. She was perfectly anæmic, as white as alabaster, and had been more or less so during each period of gestation, frequently suffering from 'sore mouth' and its concomitant evils. From indications, the fœtus had perished some time previous. In this instance, death manifestly resulted from the failure of the act or function of utero-gestation, consequent upon an exhausted or impoverished blood, during which struggle the life of both mother and child were sacrificed. As in all similar cases, the 'sore mouth' here was but a link in the chain of diseased action, and the offspring of the same evil, viz: *blood deficient in its normal elements.*

"This deficiency more particularly concerns the *red corpuscles.* with an increase of the fibrinous element, now regarded by physiologists and pathologists as an excrementitious product, or waste tissues of the body. (Simon). * *

"SYMPTOMS.—We have said before that the 'mouth sore' is but the expression of a deeper disorder—an impoverished blood. The stomach, failing to receive good food for its support, creates imperfect chyle globules, and these in turn imperfect blood corpuscles. The first symptoms, then, as might be anticipated, are those of a dyspeptic character. The patient

complains of debility, loss of appetite and eructations, flatulence, uneasiness and oppression at the pit of the stomach. Along with these symptoms, upon examination, will be found urinary derangement, with painful micturition, &c. Following these ailments, after a longer or shorter duration, a scalding sensation of the mouth is complained of. * *

"Upon inspecting the mouth about this time, it will be found to present the appearance of simple inflammation, (stomatitis) patches or spots being observed on the inside of the lips, on the tongue, or upon the fauces.

"After a longer or shorter duration, and with proper treatment, this soreness or other symptoms subside, and an interval of relief follows, or, the case becoming aggravated, small, transparent, greyish or whitish vesicles become visible, having a raised ring at their base. Subsequently the vesicle breaks, an ulcer follows and spreads, the ring gradually disappearing. Cicatrization succeeds, sometimes rapidly and again tardy, whilst ulceration is very apt to recur after it has once healed. (Dunglison). The eruption may attack consecutively any of the mucous passages. Cases are on record, where a transfer of the irritation to the vagina, the nasal passages, the larynx, bronchiæ and eustachian tube took place, thus shewing not only its migratory character, but also that the producing cause is *one of a general pathologic class.*

"In cases tending to a fatal issue, the entire tract of the alimentary tube may become involved, and hence after death, the stomach and bowels often exhibit traces of follicular inflammation and ulceration.

"Treatment.—Under an idea of Plethora, (all diseases of pregnancy were formerly so regarded) our predecessors relied upon *anti-phlogistics* as the only safe line of action, and with what success, the reader may well judge. Examining the "sore mouth of nursing women" in the light of its present pathology, the necessity of a tonic and invigorating course will be at once obvious. Our plan of treatment is two-fold. First, to correct and improve the digestive organs. Secondly, to furnish such materials to the blood, artificially, as will augment the amount of its red corpuscles and decrease that of the fibrinous element."

Remarks.—The above extracts contain the gist of the writer's views. There is nothing new or peculiar in his treatment.

We wish the reader to bear in mind Dr. Maris's views of the *cause* of the disease, viz: "*The stomach failing to receive good food for its support*, creates imperfect chyle globules, and these in turn imperfect blood corpuscles."

Now who does not know that a failure to receive proper food, inevitably inlays the scorbutic diathesis. Religious persons who mortify themselves by long and rigid fasting, become scorbutic. We have seen the evidences of it in such persons, not only in the fœtid breath, and puffy gums, but in the loss of teeth, yea, in the loss of life! By reference to our analysis of cases the reader will find a case of death from this cause.

Persons starved to death display the objective signs of scurvy in the mouth. (*Lind*).

The scorbutic diathesis is the natural pathological condition, then, that all persons fall into under deficient or defective nourishment, or any abuse of the natural laws of alimentation presisted in, gluttony, drunkenness, or otherwise—poverty and want, or the abuse of plenty. Nobody, is scarcely, free from some degree of taint.

Hence we see how difficult it is for delicate breeding women to escape scorbutus with its tendencies to local lesions, first in the mucous tissues, and so on to denser structures. No other view of the pathology of the nursing sore mouth is adequate to account for the constitutional and local symptoms.

Dr. Hubbard's Letter.—We have failed to get the No. of the American Journal of the Medical Sciences, which contains Dr. Hubbard's article on the Nursing Sore Mouth, and therefore insert a letter from him, in which he alludes to the points of interest in the paper. We also quote what Hutchinson says of Dr. Hubbard's views.

"Dear Sir.—Please accept my thanks for your novel and interesting publication on the 'Nature, Cure and Prevention of Epidemic Cholera.' I should have acknowledged the obligation long since. From its perusal I derived no little pleasure. I am quite prepared to believe that the scorbutic dyscrasia is

a powerful predisponent, cause of cholera and many other diseases.

"The paper on nursing sore mouth written by me, (of which you speak in pencil, note on margin of publication,) may be found in American Journal of Medical Sciences, 1833, Jan. No. XLIX., New Series, page 269. There may be two new ideas in that paper, to wit. viz., that the disease is ordinarily accompanied by intestinal ulceration, and secondly, that in order to cure the mouth, special treatment must be given to the intestines; and perhaps a third idea (new) in this connection, viz., that astringent medicines are quite effectual in healing these ulcerations, when used in the form of partially insoluable pills.

[Dr. Hubbard, of Ashtabula, Ohio, saw at one post mortem of a well marked case of stomatitis materna, from which the patient died, (the buccal ulcerations preceding the diarrhœa) five ulcers of about three lines in diameter, indurated and very deep; three of them situated in the colon, and two in the illium—the surrounding surface being healthy, or nearly so. Dr. Hubbard is of the opinion that the intestinal ulcerations exist in all well marked cases, and that the disease is essentially ulceration of the mucous follicles. He uses the sulph. of zinc, as an astringent, combined with ipecac, resin, mastic, and white turpentine; the combination preventing the solution of the zinc till it reaches the intestinal ulcers. He says, that he could detail seven cases, in which this treatment was completely successful. HUTCHINSON *on Stomatitis Materna.*]

"Let me here mention one observation in regard to Stomatitis Materna, though it be opposed to your theory of its scorbutic origin. That is, I have hardly ever seen a case among the really poor: here it prevails among people who are able to live well.

"I have spent a good part of two seasons in the 'Iron and Copper Regions,' of Lake Superior where, until, this last summer succulent vegetables were ever expensive, often entirely consumed by early spring, so that until a new crop was raised the daily fare for months would be wheat-bread (superfine,) fresh fish and salt meat. Cases of Scurvy were of course

common during the Spring months, followed by diarrhœa and dysentery, during the summer season; and mucous diarrhœa of a remarkable fatality used to scourge that region, sweeping off multitudes of children: those under three years of age were quite obnoxious to the disease. Intelligent medical gentlemen residents, informed me that but few children had been reared at the Copper Mines, and I can from personal observation declare that there has been heretofore, extraordinary mortality among children in the "Iron Country," at Jackson and Margaretta villages. Diarrhœa among adults is very common, and during the summer it is prone to assume a chronic form—and to grow to ulceration. It is the popular opinion that the free use of berries (acid) arrests epidemic diarrhœa, and dysentery, and my own observation confirms this conviction of the people. The huckle and red berries are abundant there, but do not ripen until the middle of August. The suffering inhabitants seize upon them as if by instinct, and the pestilence is stayed. During my long visits to the 'Iron Country,' I was so well convinced that the scorbutic diathesis was a powerful and indeed an almost exclusive agent in the production of their to me extraordinary intestinal disorders, that I steadily urged upon the settlers the necessity of raising more vegetables, and the smaller acid fruits, currants and berries, and of using freely good dried fruits, and 'sound cider.'

"The intestinal fluxes of that country are not wholly owing to scorbutus, for the climate is remarkable for sudden and great changes of temperature in summer. While the days are often quite warm, the nights, except only about two weeks in August, are so cold that if a fire is not necessary, it is comfortable to sit by. Add to this cause (great alternations of temperature,) careless clothing, 'Camping out,' exposure to rains, irregular eating and sleeping, and you have the adjuncts of scorbutus in the production of those diseases. [Developing causes]. A red mouth was often noticed, but I do not think I saw a case of Stomatitis Materna. Epidemic Cholera has not prevailed with severity north of Sault St. Marie. At that point and Mackinaw, it has been very severe. At those places succulent vegetables and fruits have ever been

very expensive, often not to be had at any price. Please excuse the liberty I have taken in writing you at such length.

Yours respectfully,

J. C. HUBBARD."

Remarks.—This contribution is valuable inasmuch as it gives the post-mortem appearances—ulceration in the bowels. The reason why women of the poorer class are less troubled with nursing sore mouth, is because they are under the necessity of toiling for a livelihood, and *active exertion wards off Scorbutus*

The letter is valuable for the testimony it bears to the efficacy of acid fruits in curing the watery and bloody fluxes of the belly—corroborating our views of their scorbutic nature.

Dr. Reyburn's Notice.—In the transactions of the "American Medical Association, Vol. 8, page 249," in DR. REYBURN'S Report on the diseases of Missouri and Iowa, is the following:

"*Nursing Sore Mouth.*—Cases of this disorder were reported in St. Louis, in December 1854, and January and February 1855. From information given us, we learn that the disorder was intractable, diarrhœa usually accompanied the stomatitis; in some cases there was tenderness of the precordia with other signs of sabacute gastritis. Irritative fever was attendant on it, and, in some subjects, the secretion of milk was suspended. In all anæmia and emaciation became more or less marked. These cases, which were somewhat numerous, are the first of the disease that we have ever known in St. Louis."

Remarks.—The extraordinary summer season of 1854, accounts for the epidemic outbreak of nursing sore mouth in St. Louis. The Evening News of Sept. 1st, of that city, says of the hot weather of that season as follows:

"The long continued hot weather is almost unprecedented in this city. For almost four months the thermometer has ranged in the neighborhood of 100· as often above as below. Yesterday there were seven deaths from sun-stroke reported, and probably several more not known."

The Republican of Sept. 19th, says:—"*Office of the Board of Health.*—For a few days past this office has resembled a

hospital more than anything else. The sick from the city and country have poured into it, and sometimes the place has been almost jambed with invalids lying over the floor, on the door-steps, and leaning their emaciated forms against the walls pleading for relief," &c. (*Reyburn's Report on the diseases of Missouri and Iowa: Transactions of the A. M. Association*, 1855).

It appears by said report that diarrhœa, cholera, cholera infantum, dysentery, sunstroke, and yellow fever prevailed; and that all except the last were epidemic and very fatal. An epidemic of biles, of jaundice, and nursing sore mouth followed. It was a very sickly year—there was a general blight of vegetation, and vegetables and fruits were of the poorest quality, extremely scarce, and bore three or four prices. Now what seems strange to us is, that no allusion is made to defective and deficient alimentation as causation of the sickness! It appears plain to us, that, under the extraordinary circumstances above specified, the scorbutic taint was inlaid *generally;* and developed by heat and the accidental circumstances and conditions surrounding each individual falling sick. Some stood it through, some fell of sunstroke, according to the scorbutic law of sudden death; in immigrants it was cholera; in infants cholera infantum; and in many nursing women it took the form of nursing sore mouth.

We are aware that Dr. Drake, in treating of alimentation, and *want of sufficient food* as a questionable cause of disease in the West, comes to the conclusion that there is an abundance of food for all in the Mississippi Valley. Yes, there is an abundance of pork, bread, and coffee! But will this diet, be it ever so abundant, maintain health? We say not. It will inevitably inlay scorbutus. The laws of diet are but imperfectly understood, and our investigations and researches aim at an elucidation of this all important subject.

The efficacy of the acid treatment of diarrhœa, cholera infantum, and of Asiatic cholera, set forth in said Report, page 260, sustains our view.

Dr. Pitcher's Article.—The Peninsular Medical and Surgical Journal, Feb. 1856, contains an Article, entitled "*Por-*

phyra, or Scurvy as Originating from Moral Causes—and also from Insufficient Nutrition, when Supervening upon Typhoid Fever. By Z. PITCHER, M. D." Not being a subscriber, and receiving the No. containing said article, we infer the author sent it knowing we were making researches in the same direction into the *overlooked* associations of scorbutus. We thank the Dr., for this polite attention, and use the article to especially illustrate our view that the nursing sore mouth and scurvy are identical; one of his cases (which fact, however, his sagacity overlooked) being a fatal nursing sore mouth affair.

Not caring to follow the Dr. through all his observations, suffice it that we quote that portion of his paper pertinent to our purpose.

"Here, where the Typhoid diathesis has predominated for the last five or six years, instances have occurred during the past autumn, which show how it can be melted down and recast into any one of the related forms of disease, the product being varied by the mode of treatment; the heroics of modified Thompsonianism producing one result, the stolidity of Hahnemann another, and the Hydraulic system a third, modified by the partnership it may have formed with one or the other.

"This blending or interfusion of nosologically rather than pathologically distinct affections [reader mark this] has received confirmation from the effect of the most antagonistic of these modes of treatment. The Eclectic or Thompsonian producing gastro-duodenitis, with symptoms in some cases simulating yellow fever and in others the lividity of cholera, whilst the fasting appertaining to the folly of Homœopathy, has suffered the depravity of the fluids to increase from day to day, and the nervous energies to become exhausted, till the tissues gave way and the blood escaped from every outlet of the body."

"A Daniel come to judgment"—the "Typhoid diathesis" under varied conditions developed as yellow fever, cholera, or scurvy. Before the reader gets through our nursing sore mouth monograph, he will find others also testifying to this interfusion of typhus into other forms of disease; and he will find testimony also showing that "*deficient nourishment*" will

inlay the "Typoid diathesis." Is not the ideopathic pathological condition Dr. Pitcher is treating of, then, a scorbutic state of the blood? Is not typhus, scorbutus? Not "*nosologically*," but "*pathologically*." Deficient nourishment will inlay it, and proper and sufficient food cure it. (See Dr. Charles Hooker's able Report on "the diet of the sick," in the transactions of the American Medical Association, Vol. 8, page 480.) But let us have Dr. Pitcher's illustration.

"On the 29th of August, I was requested to see Mr. Gager, who, I was informed by the members of the family in which he lived, had been under the care of a Homœopathist, who had been treating him for Typhoid Fever for the preceding twenty days, during which time and for five days previous to the commencement of his attendance he had had no alvine evacuation at all and scarcely any nutriment. He was quite delirious, and trembled like one in delirium tremens. The pulse was small, frequent and feeble. Skin covered with petechiæ and patches of ecchymosis. Gums spongy and teeth loose. A dark blood oozed from the mouth, nostrils and ears, and the urine was also bloody.

"Some nutriment was provided for the young man, and his bowels gently moved by tea-spoonfull doses of olive oil, to which five drops of Spirits Turpentine were added. The dejections occasioned by this measure consisted of a pultaccous mass of black blood. As was expected, he continued to sink, and died on the thirty-first of August."

No one can doubt the termination being scorbutus.

Now for the nursing sore mouth case. The Dr. says, "The notes of the following case were furnished by Dr. Christian, of this city." (Detroit).

"Mrs.——, when she came under my observation, had been about twelve months under homœopathic treatment, which had brought her *successfully*, and with great *eclat* to the doctor, through *dropsy* of the *heart*, *inflammation* of the *brain*, *Typhoid Fever*, and lastly her confinement. [Puerperal Anæmia].

"From information elicited on examination into the previous history of the case, the dropsy of the heart appeared to have been some functional derangement consequent upon an anæmic condition. The inflammation of the brain apparently was

neuralgia, arising probably from the same cause. [Constitutional symptoms of nursing sore mouth].

"When we first saw her, several weeks after her delivery, she presented a perfectly bloodless surface, mouth and throat distressingly sore, exhausting diarrhœa, and vomiting of every thing taken into the stomach, even to the sugar pills which, however, continued to be administered and taken with astonishing perseverance, and all nourishing diet strictly prohibited. [Constitutional and local symptoms of nursing sore mouth].

"Although to the perception of nurses and friends, the patient was fast failing, the attendant could see, or affected to see, nothing but daily improvement.

"At length, tormented by the distressing vomiting which followed upon taking her pills, and eager for more substantial nourishment, the patient one day, by the advice of her nurse, discontinued the pills, and resorted to nourishing food. There was no vomiting after it, the diarrhœa ceased, and she had quiet rest at night, which she had not previously for weeks. [A proof that the affection was scurvy].

"But the improvement was only temporary, she was again persuaded to return to the little pills and low diet, and with them all the distressing symptoms again returned. This continued for some days. A change of treatment was resolved upon, and an experienced and eminent physician called in. He at once pronounced an unfavorable prognosis, perceiving that the vital powers were too nearly exhausted for them again to rally. By request, however, he continued his visits and the change was at once apparent to all, in the relief from many distressing symptoms. There was a feeble attempt of nature to rally, but she gradually failed. The vomiting again returned, the matter of which consisted of greenish watery substance ejected by a sudden spasmodic action, hemorrhage occurred from the gums and nares. The soreness of the mouth became aggravated, purpuræ showed themselves on the lower portions of the body, blood oozing from them, and she died." [Plainly nursing sore mouth—palpably scurvy.]

Remarks.—We have no summing up to add to this case of

nursing sore mouth, that terminated fatally a month or so after delivery; but we have a word to say more on typhus and diet, to point this moral.

Dr. Hooker says, (op. cit.) "The published *Clinical Lectures* of the late Dr. Robert J. Graves, of Dublin, contain many rational observations on the diet in fevers. He earnestly impresses 'the fact that there can be no doubt that persons have been occasionally starved to death in fever.' He says that 'long continued denial or want of food generates symptoms bearing a very close resemblance to those which are observed in the worst forms of typhus.' He advises that when a patient is 'laboring under the effects of fever and protracted abstinence,' with no appetite for food, we should 'press it on him, and give it as a medicine.'

Dr. Hooker enforces these axioms by a case of his own, the patient 'picking the bed clothes, sawing the air, agitated with subsultus, tongue black, dry and cracked, pulse, 140,' &c. This patient had taken no food for three weeks. 'With these symptoms, *caused probably more by abstinence than by fever*, [italics ours] it was obvious he must soon eat or die; and to wait for appetite would be folly.' The doctor fed him, and he lived. He says,

"I could adduce other similar cases of patients wrested from impending death by thus forcing a supply of food; cases also tending to confirm the opinion of Dr. Graves, that, in the low stages of typhus, many of the symptoms which are considered as produced by fever are really caused by abstinence."

Now, why will not defective and deficient nourishment produce the initiatory symptoms as well as the closing symptoms of typhus? It will, as will appear further on.

Of 195 patients laboring under typhus, treated by nourishing diet, regularly administered, beginning with little, coaxing the appetite, not overdoing the matter, all but eight were restored to health by it, in Dr. Hooker's private practice. Of 124 thus treated in the Connecticut Hospital, only two died, 'one of whom was admitted in a dying condition.

Dr. Hall's Letter.—Since the publication of the first chapter of our essay on nursing sore mouth, we have received a second letter from our able correspondent Dr. J. P.

Hall, amplifying his clinical observations upon the nursing sore mouth affection. We extract the following:

"Your essay upon nursing sore mouth, I regard as a valuable acquisition to the pathology, as well as the literature of that disease. * * * * * *

"I regret that I had not an opportunity of submitting a case of this disease which occurred a few weeks subsequently to the preparation of my letter in response to your circular.

"The most important symptom present in this case, not noticed in the letter, was a very obstinate diarrhœa; but the specimen was a very complete one and I analyzed it with much more care than I had hitherto done.

"I have also seen another case complicated with purpura and jaundice: the two latter symptoms consecutive. This case terminated fatally, in consequence of hemorrhage—blood escaping from almost every emunetory."

Remarks.—What was this but scurvy? It was very like Dr. Pitcher's case, which he called scurvy; viz.: to all the usual constitutional and local symptoms of nursing sore mouth, were added purpura and hemorrhage oozing from every pore.

This completes our addition to the literature of nursing sore mouth, though doubtless we have failed to gather all the contributions extant. It is getting to be more known and better diagnosed of late years, and the contributions to its literature will, doubtless, continue to fill many pages in the journals. Many able and scientific practitioners do not recognize it yet as a distinct disease, under this name. Witness Dr. Pitcher and Dr. Christian of Detroit; and Dr. Simpson of Edinburgh, has christened it by another name.

To conclude, we repeat what was said two and a half years ago—"We are not able to say what the impression may now be on the mind of the profession, after an examination of the literature of the affection with the key of explanation offered by us, nor are we anxious at all about the matter further than the interests of science and humanity are concerned."

CHAPTER II.

MEDICAL TOPOGRAPHY OF THE STATE OF ILLINOIS.

The topography of a country throws much light on the character of its diseases; we, therefore, bring to our aid, in this inquiry, the knowledge acquired from observation of the medical topography of Illinois, where we practiced medicine nearly twenty years, and encountered numerous cases of the anomalous affection under consideration; found it so common or prevalent during certain years, that it may be said to have been epidemic, or sub-epidemic, at least.

It is universally conceded, that the face of a country has much influence over its meteoric manifestations; and it is, perhaps, as generally agreed, that the meteoric phenomena, viz.: temperature, vicissitudes, dryness, humidity, play of electrical forces, etc., are not only direct causes of disease, but that they exert the utmost controlling influence also over the vegetable kingdom, governing production, or the staple crops and fruits, during each and every year, thus not unfre quently proving the indirect causes of disease, from the abridgment of food; as famine, partial famine, and even poor diet, are known to be remote causes of pestilence.

The endemic influences more especially manifested in low, paludal, or marshy districts of country, situated within the temperate latitudes, as is the case with Illinois, are such as to subject the inhabitants to frequent attacks of the common or ordinary forms of intermittent, remittent, and continued bilious fever. So generally is this the case, that few persons emigrating to a *new* country, of this topographical character, even from lower latitudes, escape attack; those from northern regions and elevated mountainous districts, of old-settled countries, being most pre-disposed. It requires a certain high range of the thermometer, or elevated temperature, to develop the endemic influences, as 65° or 70° F. at least; and for the full effect, that this shall be prolonged for weeks

or months, as in summer; and in proportion to the intensity and prolongation of summer heat, as a general rule, will be the amount and malignancy of the summer and autumnal epidemics. By continuing to reside for a series of years in a country of this character, the complexion of persons becomes darker, or more swarthy, and many are rendered permanently sallow, icterode, jaundiced, or cachectic, in their appearance, denoting dilapidation or impairment of the general health. Such persons will be found to have acquired visceral engorgements, tumefactions, and indurations, which permanently derange digestion and assimilation, and tend to dropsical effusions and organic affections. Children born and reared in localities where these endemic influences are of marked intensity, become old, as it were, while young, presenting a lean, wrinkled, palid appearance, with tumid abdomen and stunted stature, and ordinarily betraying evidence of tardiness of perception and a low grade of intelligence.

In the absence of any positive knowledge of the *nature* of these endemic influences, so deleterious to human health, the medical profession, generally, have tacitly accepted, or acquiesced in the Italian hypothesis of the presence of a poisonous air or miasm, called *malaria* or *miasma*. No analysis, however, of the air in the localities most deleterious to human health, has ever detected any substantive entity or poisonous principle in the air, or the slightest departure from a healthy standard, save, perhaps, a smaller amount of oxygen in very hot weather; and the whole foundation of the dogma rests on inference alone. Other topographical regions, as we shall see, are uniformly subject to marked and peculiar endemic influences, differing in their effects from the above, and hence the notion has arisen of sundry kinds of malaria, and the epithet of *marsh* malaria has been applied to the one under consideration. The hypothesis of different kinds of malaria, however, has never come to be as generally acquiesced in, but rather the hypothesis assumed is, that obscure and diverse manifestations of disease, or masquerades of maladies, are ascribable to marsh malaria *modified* by place and circumstances. For the last century or more, this sweeping hypo-

thesis of Lancisci has held dominion over the records of medical philosophy, growing with its growth, and strengthening with its strength; and upon it, as a foundation, are now erected the two superstructural hypotheses of the animalcular and cryptogamous theories of the *essential nature* of malaria or miasmata! It is generally regarded as the product of vegetable decomposition, whether it be held to be of animal or vegetable nature; and yet its endemic effects have been witnessed in arid deserts, where no vegetation ever existed, much less animal remains, to produce it. By the best authorities, the affirmative of the question, as to the endemic presence or substantive existence of malaria, is regarded as wholly unproven, altogether assumed.

Again, the endemic influences most manifest in high, hilly, and mountainous regions within the temperate latitudes, are such as tend to develop the local inflammations, or the diseases classed as the phlegmasiæ; and especially is it the case that thousands in those topographical regions inherit or acquire the tuberculous organization or strumous diathesis, and die prematurely of scrofulous affections, particularly of pulmonary consumption. The characteristic conformation of system into which the topographical or endemic influences present seem to mould this very large class of persons, is a small, slender chest, a long neck, pinched nostrils, ruby lips, light hair and eyes, and a fair, thin skin, accompanied with quickness of perception and acuteness of intellect. These influences are said to be rendered more operative by consanguine marriages, and the taint is generally believed to be transmissible from parents to offspring.

A third very remarkable illustration of endemic influence is witnessed in the subjects of cretinism, who are reared and dwell in the mountain gorges of the lesser Alps, and other deep gorges and valleys of moderately elevated countries in middle and southern Europe, and in middle Asia, and probably in other deep and narrow defiles and mountain gorges of the temperate latitudes in other countries. Goitre, or the Derbyshire neck, is generally associated with the deformities that betoken cretinism, and ascribed to endemic influences of the same nature. The influences are such as tend to idiotic

deformities of head, a dwarfish, misshapen person, beastly propensities, and idiocy of mind. Every degree of influence is impressed on subjects; some betokening but little of the taint, while others, on whom the vicious influences fall most heavily, degenerate from a bright early infancy to a state of complete idiocy, and the most disgusting deformity. The taint is not inherited, as the children of cretins removed from the localities grow up without deformity; and is doubtless acquired, as infants from other parts transplanted to those mountain gorges, many of them, take on the bias and grow up deformed and debased cretins.

Still another striking illustration of topographical or endemic influence is manifested in persons who work in, or are reared in mines, below the surface of the earth. A considerable proportion of persons, so circumstanced, finally become the victims of a form of anæmia more marked with a perfectly blanched or etiolated expression of countenance, and depraved habit and condition of the system, than are manifested, even, by the subjects of puerperal anæmia, the disease which is the subject of this essay; their blood fades, their strength fails, the skin assumes a transparent alabaster appearance, and a hydræmic state of the system prevails.

These are well-known, uniform, and strongly marked illustrations of topographical influences, not to speak of others; and whether they depend on specific, inscrutable poisons present, or are owing to modifications of diet and the general laws governing climates—modified impressions of the vital stimuli—is not a settled matter. If climatic influences and mode of living have effected the differences in the physical conformation and complexion of the several races, the doctrine held by many, and which must be taken for granted, if all have descended from one pair, it were more conformable to analogy to impute the endemic influences present in any region to habits of living and climatic laws, rather than to specific miasms; for let the occupants of the different topographical localities, or elevations, spoken of, be transposed, and their systems tend to undergo the modifications of acclimation, a climo-vital process injurious in proportion to extreme susceptibility, tenderness of age, or faulty organization—the efforts

of nature (often overshooting the mark) seem to induce the pathological conditions spoken of. Hence, both the danger and advantage that may result from emigration. Hence, also, the origin of the term acclimated. Native organization renders persons more or less adapted to particular climates, and a change of residence is a great resource for invalids.

It follows, then, that there is no climate, dietary, topographical position, or class of endemic influences, present in any one region of the world, perfectly healthful for all races, ages, and constitutions, as a permanent matter the year round. Birds instinctively migrate, to avoid the extremes of heat and cold. Men do the same thing rationally, and escape the endemic causes of disease, developed only under extreme thermometrical influences. Transfer a New Orleans negro to Canada, and he falls a victim to the climate in a year or two; the same of the Canadian who takes up his abode permanently in New Orleans. A striking example of *artificial* endemic influence is seen in the cruel process of producing enormously enlarged livers in geese, by confining them in hot-houses, or before fires, and giving them scanty supplies of food and water, for the purpose of preparing from their livers, thus several fold enlarged and scorbutically softened by the process, the delicate pie so esteemed by the gourmand, called *paté de foie gras;* and this artificial illustration of endemic influence producing viceral engorgements, is by no means barren of instruction in a discussion on topography, climatic influences, malaria, etc. The result is uniform, so far as we are enlightened, and no one would pretend to explain it, we presume, on the hypothesis of the presence of a malaria, though an epidemic should be thus instituted in the geese quarter by the proprietor of a restaurant.

Topography in aid of medical science, then, is to be studied, with reference to physical causes that are known to modify the public hygiene, by affecting climatic modifications in the surrounding vital stimuli, viz.: *food and drink, atmospheric air, heat, light, and electricity;* all of which being absolutely necessary to life, are, therefore, called *vital stimulants;* and no truths in medical philosophy are better known and established, than that mild or medium impressions are

salutary, and extreme impressions hurtful. These axioms hold good in regard to the impressions of each and all of the vital stimulants,—the extremes destroying life, and the mean impressions upholding it and maintaining health. Here, then, are the natural causes of life and health, and the natural causes of disease and death of not only man, but of the whole organized world, animal and vegetable; and whether or not there are any other *external* causes of disease, except accidents, is very questionable. As to the existence of any substantive essence, or imagined malaria or miasma, supposed to be the cause of the endemic diseases of a country, we are altogether skeptical, or rather, be it said, we disbelieve the hypothesis *in toto*. Changes in the force, quantity, or quality of the natural, vital stimuli, as applied to, or as acting on constitutions or organizations well or ill-adapted to sustain the impressions, are, doubtless, adequate and sufficient to carry out the purposes of Deity in the rise and fall, the life and death, of man, and all other forms of organized existence. These being our views, in brief, without detaining the reader with a recital of more than the above general principles bearing on this subject, we proceed to take a summary glance at those physical causes and phenomena in Illinois, that modify the healthfulness of the climate.

Physical Geography.—The Mississippi Valley is flanked on the east by the water-shed of the Alleghany Mountains, the highest altitude of the summits of which is about five thousand feet; and on the west by that of the Rocky Mountains, the highest peaks of which are some fifteen thousand feet high. The two inclined plains from these water-sheds bear forward their surface-waters, from the east and from the west, into a common longitudinal trough—the Mississippi River, which has its sources in the paludal summit-level region (latitude 49° N.) that bounds the valley northwardly, and divides it from the waters that fall into Hudson's Bay, the altitude of which summit is about one thousand feet above tide-water. The whole Mississippi Valley, then, pitches to the south less than one foot in a geographic mile, by which arrangement all its lateral tributaries are deflected southwardly in traversing the two inclined plains, to pour their

waters into the great central longitudinal channel of the valley, which bears off all both right and left, onward and downward to the Gulf of Mexico, lat. 29° N. Throughout the entire valley, from the sources of the Mississippi to its mouths, intermittent, remittent, and continued bilious fevers are endemic in summer, strongly *epidemic* in some seasons, and increase in force or grade in descending the river, inversely as the latitude decreases, till, at New Orleans, the highest grade of bilious fever passes into yellow fever, which, is often epidemic there.

The State of Illinois lies mid-way between the sources and mouths of the Mississippi River on the eastern side of it. Along its northeastern border, near lake Michigan, is another summit-level water-shed, dividing the St. Lawrence valley from the valley of the Mississippi, elevated about six hundred feet above tide, which turns all the waters of the Mississippi valley in a southwestern direction. At the mouth of the Ohio River, the Mississippi is some three hundred feet above tide, consequently, the whole area of Illinois is an inclined plain, facing the southwest, pitching some three hundred feet, and presenting the hottest exposure of any topographical arrangement whatever. The extreme southern limit of the State, at the confluence of the Ohio with the Mississippi River, is in latitude 37° N., and its northern boundary is 42½° N., and it lies between 10° and 14½° of W., longitude from Washington, being three hundred geographical miles long by about two hundred and fifty broad.

This general view of the hydrography and topographical inclination of Illinois, reveals an exposure of the hottest character, combined with stagnation in drainage; or such a very moderate descent southwestwardly, that the whole face of the State is so tardily drained of the surface-water from rains and snows, that cold and humidity in winter, and heat and humidity in summer are inevitable results, until the retarded surface-water is evaporated, after which heat and drought not uncommonly close the season. We will now proceed to speak of the leading topographical features of the different sections of the State.

Southern Illinois. — Notwithstanding the physical fea-

tures of the State of Illinois are such as to give it the character of a level country, still its surface in some parts is a good deal diversified. The southern portion of the State, say about one-fourth of its latitudinal extent, is, much of it, very hilly and broken, abounds in lime-rock cliffs, ledges, ridges, and abrupt gorges, and is generally covered with stately forests of oak, hickory, poplar, maple, linden, sassafras, sycamore, etc. Grape-vines are abundant and attain to a remarkable size, sometimes nearly twelve inches in diameter, and the sassafras tree, which is only a shrub in more northern regions, often presents a trunk eighteen inches or even two feet in diameter. A hot-house effect seems to be produced on vegetation in some localities, resulting from topographical causes and an extraordinary richness of soil, viz.: alluvial bottoms with southern exposure, along the Ohio, Mississippi, Big Muddy, and Kaskaskia Rivers, protected by bluffs and forests from the presence of even a cool breeze from the north. This is the case with the alluvial point or extreme southern terminus of the State, where the city of Cairo is situated; and while it may be said to be geographically the most eligible and magnificent location for a city in the Mississippi Valley, the curse of *malaria*, according to the received hypothesis, but as we hold, extreme impressions of the surrounding vital stimuli, will forever render it an unhealthy place. The same thing may be said of other low, humid, confined, oven-like localities in the southern peninsula of the State. These southern regions of Illinois, particularly along the rivers, are rugged without being picturesque; but proceeding northwardly, towards the interior of the State, the beautiful and fascinating prairies soon appear. We speak from personal observation, having, the Wabash counties excepted, threaded and explored, on horse-back, the whole length and breadth of the State, from the junction of the Ohio and Mississippi Rivers to the Wisconsin line, Fever River, and the shores of Lake Michigan: we have traversed its prairies, some of them full thirty miles broad, without a ravine, or a tree, or a "lost rock," even, by which to mark our progress, or guide us in our direction; we have coursed its rivers by steamboat, and its canal and railroads are familiar to us.

Middle Illinois.—The middle portion of the State—say a latitudinal zone embracing one-half of the length of the entire State—has ever been regarded the *ne plus-ultra* region for agricultural purposes, and is of unsurpassed beauty and loveliness in its appearance. It used to be spoken of by our friend, the late Hon. George Forquer, of Springfield, as a "belt" of country pre-eminently adapted to agriculture and railroads; and so frequently was it designated by the appellation of the "belt" in his legislative speeches, during the internal improvement mania of 1836, that he was addressed in debate, by a political opponent of less-favored southern Illinois, as "the gentleman from the *belt*." This beautiful champaign character of country extends across the entire State, from east to west, and the same general character of open country, or plains interspersed with groves and margins of forests along the water-courses, is continued west of the Mississippi, through Missouri and Iowa, and so on across the Plains to the Rocky Mountains. In the heart of this broad belt of fertile country, in the centre of Illinois, is situated the Sangamon River region, the model portion of the State, and a description of this will serve for a type of the whole State.

The soil is a deep, black loam, of variable depth,—say from one to three feet,—often of much greater depth, where the debris of the soil has accumulated by deposit lying over a chocolate-colored subsoil, of from five to ten or more feet in thickness, and this on a hard pan of blue clay of several feet, sometimes twenty feet, in thickness, impervious to water. Under the blue clay is quicksand, and in sinking wells, wooden curbs, water-tight, are necessary to insure progress after penetrating the clay. The water below the clay, as well as the surface-water, to some extent, is impregnated with carbonate of lime, decomposing soap, and rendering turbid solutions of acetate of lead or nitrate of silver; in other words, the wells afford only hard-water. The surface water, in the wet season of the year, viz.: spring and early summer, is inconveniently superabundant; for, as little or none penetrates the blue clay, the summit level prairies present frequent sheets of standing water, or ponds waiting the process of

evaporation. These vernal ponds are often diversified with archipellagoes of gopher hills and cray-fish chimnies; and where the prairies were not burnt over in the autumn previous, the dried weed-stalks often stand six or eight feet high, sparsely, all over those wet prairies. These summit-level plains between the water-courses, then, are not only open prairies, but often impassable morasses, on account of this miry condition of the surface, in the earlier season of the year. The settlements or farms range along the timber-lines, or forest-belts, that skirt the water-courses on either side.

The rivers run in deep, broad gorges, presenting the appearance of abrupt chasms, sunk below the common or general level of the country. The chasms are broad and deep, in proportion to the size of the rivers; the chasm in which the Mississippi River runs will average, perhaps, some seven miles broad; that of the Illinois River, about three or four miles broad. The borders of these chasms are either lime-rock palisades, or conical hills, with frequent gorges or ravines between. They are called "the bluffs;" are generally clothed with forest timber, sometimes only with grass. The bluffs are high in proportion to the magnitude of the river, and vary in altitude at different points. The bluffs on the Mississippi are frequently two or three hundred feet high, and sometimes present a palisading of lime-rock of this altitude for twenty miles in extent, only interrupted by the narrow rivulet and creek-gorges that cut their way through the bluffs. The marginal forests that skirt the rivers are broad, also, in proportion to the size of the river, and vary in width at different points. The skirting forests on the Mississippi, between the verge of the bluffs and the upland prairies, are not unfrequently ten miles broad. In the Sangamon region the creeks even have marginal forests of two or three miles in width, and the timber is lofty, even to the prairie line—bold, lofty oak and walnut timber of the finest quality on one hand, and the most desirable prairie land imaginable abruptly opening along this fine forest growth on the other.

The alluvial land lying in a river chasm between the bluffs, is called a "bottom." It is almost a perfect level from bluff to bluff. In some places the bottom lands are clothed with

the heaviest and most dense forests conceivable, and in others they present an open plain, or prairie surface. The river cuts a tortuous channel through this alluvial bottom, at one time hugging the right hand bluff, and then playfully seeking the left. In extremely high water, when a river overflows its banks, the water may extend from bluff to bluff, and the river be, indeed, six or eight miles wide.

This character as regards the rivers and creeks of southern and middle Illinois is universal, there is no exception; and the smallest creeks are miniatures of the Mississippi; the abrupt bluffs, the level bottom, the tortuous channel, the muddy water, absence of pebbles—and question whether you will get through or sink in the mire in attempting to ford—characterize all the streams. There is no such thing as a gradual descent to a river. As you approach a river from the open country or summit-level, the prairie begins to be more rolling near the timber, caused by the sloughs which carry off the surface-water. Along this rolling character of prairie are the cultivated farms, and residences of the yeomen of the country. Finally, the surface becomes hilly and rough, and this character of surface is always clothed with brush or forest timber. Now you are getting into the bluffs. The gorges of the sloughs deepen and wind about in the timber; the hills pitch and swell more fantastically, as you approach the river, till, at last, you find yourself on a precipice overlooking the river chasm or bottom, which lies, perhaps, some two or three hundred feet below, and the bluffs on the opposite side of the river-gorge full in view.

Some of these views from the verge of the bluffs are of unsurpassed beauty and loveliness. We question whether the human eye ever rested on a more beautiful landscape scene than is presented at the verge of the bluffs west of Edwardsville, at the head of what is called the American Bottom. You stand high above the scene, on the greater curvature of an immense crescent, the horns of which are distinctly defined for twenty miles on either hand, up and down the Mississippi; the towering bluffs of the Missouri side are full in view; and the grand confluence of the Missouri with the Mississippi lies before you in the valley, which is richly diversified with forest

and prairie, and the most highly cultivated farms. But beautiful as is this immense bottom, an hundred miles long by an average of six or eight miles broad, reaching from Alton down to Chester, and productive as it is, yielding an hundred bushels of corn to the acre, an hundred years in succession, without manure, still it is like the rice plantations of Georgia, or the shores of an African river, in the production of malarious fevers of the most aggravated forms and pernicious type.

Northern Illinois.—The northern part of the State presents quite a different topographical character. North of a line passing from, say about the mouth of Rock River, eastwardly to Ottawa, and up the valley of the Kankakee, the peculiar characteristics of the more southern rivers are gradually lost; the water in them becomes clear, their channels pebbly, often rocky; their course less tortuous; the banks sloping; the precipice-bound river chasms disappear; the rivers are less affected by spring freshets, or by drought in summer, and the drift of geologists is more common; in some places hundreds of granite boulders appear on a single prairie. The Rock and Fox River Valleys are, perhaps, the best wheat regions in the State, and the water power in those rivers is unlimited. The forests are thin and less lofty than in Southern and Middle Illinois. The face of the country is more rolling, and the prairies more undulating and better drained, than in the Sangamon region; but the soil is not so deep, and is more silicious and gravelly. Wheat is the great staple; corn appears stunted. Upon the whole, it cannot compare with Middle Illinois as an agricultural region, in adaptation for stock raising especially.

The Mineral Country, or Galena District.—This region presents the appearance of an interminable jumble of bald hills. The native forest growth, wherever it existed, has been appropriated to smelting uses, and the eye is fatigued with the sameness of the scene, where all the hills seem to be of equal height, as if cut down out of a level country by sinking surrounding gorges. The city of Galena is built in a deep gorge of these hills occupied by Fever River. There is barely space for one business street along the little insig-

nificant river, so that the back streets have to be cut, terrace-like, in the hill sides. They are reached by carriages with difficulty and danger. There are few cross streets, it being impossible to ascend the hills in a direct line from the river. One-half of the city has escaped from this gorge, and crowns the summits of the hills, some two or three hundred feet high; and, for the convenience of transit up and down, wooden stairways are erected. There are two climates, therefore, in Galena; the climate under the bluffs being desirable in winter, and that above the bluffs in summer.

Agriculture has been greatly neglected in all the mining country, not half enough provisions being raised for home consumption. The country presents no inviting aspect to the farmer; unlike most other localities in the State, the prairies are broad, and without groves of timber, from Galena to the Rock River settlements, eastwardly, and, therefore, not settled upon; and the consequence has been, that supplies, not only for the mining population, numbering, perhaps, ten thousand, but for about an equal population in the city of Galena, have been hauled from the Rock River mills and farms, or shipped from St. Louis. Despite all these disadvantages, Galena has grown to be a rich and prosperous city, owing to the mineral resources of the surrounding country. It is situated some seven miles up the gorge of Fever River, in the Mississippi Bluffs, and the river is rendered navigable only from the back water caused by freshets and floods of the Mississippi. Were it deprived of these accidental advantages, Galena would be without its shipping list. The completion and opening of the projected railroads to Galena will do much for the mineral country.

The Lake Michigan District.—This region discloses a different topographical character altogether from any portion of the State. The approach from the Des Plaines, and also from the Kankakee River, is over a flat prairie of from twelve to thirty miles broad, constituting the summit-level water-shed between the Mississippi and St. Lawrence Vallies. The surface-water of this table is only gotten rid of by evaporation in the main. The soil is thin and sandy, and a clayey hard-pan lies under it, which prevents the water from sinking readily. The Des

Plaines River banks are only some twelve or fourteen feet higher, topographically, than the Lake Michigan shore; and in the highest freshets, when the Des Plaines overflows its banks, a portion of its waters finds vent into an arm of the Chicago River, and so into Lake Michigan. The first and highest bed or level of the Illinois and Michigan Canal, some thirty miles in extent, from Chicago to Lockport, is supplied with water raised by pumps from the south fork of Chicago River, a lockage of some ten or twelve feet lift, and by means of a feeder taken from the Calumet River, which rises in Indiana and falls into Lake Michigan, in Illinois, some twenty miles south of Chicago.

The Lake shore is clothed with forest timber, except at two points, viz.:—at the mouths of the Chicago and Calumet Rivers. The immediate shore is a sandy beach much traveled in early times before roads were opened. Back of this the sand is blown into hills, drifts, or dunes, of greater or less elevation, which increase in height towards the southern bend of the Lake, where they are an hundred feet high or more, and several miles broad. Thus the shore is heaped up, and is higher than the land back of it, which always prevents any distant view of the Lake. The rivers creep through these sand hills, and disembogue with difficulty—their mouths being all deflected by bars, up the Lake, in some instances many miles, by the powerful north winds.

The Chicago River, since its harbor has been improved by dredging through the sand-bar at its mouth, and the erection of piers, presents a tolerably straight main trunk of about one mile in length, running nearly due east. The main trunk is formed by two branches, one from the north-west, and the other from the south-west, draining, as well as they can, the flat lands lying back from the Lake. The river and its branches are narrow, deep, and navigable, and without apparent current except in time of freshets. On the three sides of this tripod river, stands the flourishing city of Chicago, which, within the last twenty years, has advanced from a mere trading post to be the leading city of the Lakes, having a population at this time—March, 1854—of over 60,000 inhabitants.

Fort Dearborn stands at the mouth of the Chicago River, on the right bank, the highest ground in the city, elevated some twenty or thirty feet above the waters of the Lake. The exceeding flatness of the city plat renders drainage difficult; the surface-water fills all excavations made, except in the dry or autumnal season of the year, not only in the city, but in all the country round about, so that cellars and root-houses cannot be sunk in the ground, but, if had at all, must be constructed above ground: this, however, is not altogether peculiar to the Lake Michigan District. The surface-water is a great impediment to the sinking of cellars in most parts of the State—so much so, that the majority of families are deprived of this most necessary convenience in the economy of house-keeping, to the great detriment of the public health. The humidity of the atmosphere is, of course, very great throughout the State, but probably in no locality so great as at Chicago, or within the Lake Michigan District. We have known the snow to fall six inches deep along the Lake shore, while the ground remained bare six or eight miles west. A large amount of rain falls during the year; there is much dull cloudy weather during the winter and spring seasons. The spring is always retarded by cold, and frequently deluged with rains, and at best greatly interspersed with the chilling "Mackinaw breezes," that are often felt thirty miles westwardly in the interior, and are characterized by great humidity and coldness. After hoping, and expecting, and waiting in vain for genial summer, fires are often found necessary to comfort as late as the fourth of July. From mid-summer on till November, the climate of this region is paradisiacal.

The Military Tract.—This attractive region lies in the forks of the Illinois and Mississippi Rivers, and belongs to Middle Illinois, but presents some peculiarities in its topography worthy of a passing notice. The southern, narrow peninsula is an elevated spine of lime rock, along the Illinois, and a fine alluvial bottom along the Mississippi, six or eight miles broad. This elevated spine is of an acute triangular shape, and is covered with timber. Proceeding northwardly on this spine or elevated bluff, (not unfitly compared to the back bone and ribs of an immense animal,) the timber finally

begins to grow thin, and at last the prairies appear. The prairies are, at first, very broken, having rather the appearance of bald hills than prairies, and this very rolling character of country prevails throughout all the southern portion of the Military Tract, up to the Quincy and Rushville regions. The prairies are rolling, dry, and not so wide as to deter settlers from locating anywhere upon them; hence the population is more evenly spread over the counties in the Military Tract than elsewhere. The surface-water is less annoying, and the drainage of the country better; and really this region should be the healthiest portion of Illinois. It probably is, and yet the causes which produce the *nursing sore mouth* exist here; for we have met with inveterate cases of it in different localities within the limits of the Military Tract, which will be referred to in our analysis of cases.

Meteoric Phenomena.—Sanatory surveys, the object of which is, to point out and elucidate both the general and local causes of the endemic diseases of a country, which are always obscure, carefully investigate the topography and meteoric phenomena. Following this method, we proceed to take note of the prominent peculiarities or characteristics of the meteoric phenomena in Illinois, or the constitution of the seasons governing production—the abundance or scarcity of the crops and fruits from year to year, and the concurrent state of the public hygiene. Without attempting to be minute or technical, our aim will be to develop the leading facts that bear upon the etiology of the diseases, especially the *nursing sore mouth affection*, the subject of this essay.

We well remember the three most prominent evils that beset us in our early peregrinations over the prairies, and which constituted the chief drawback to our happiness, viz: high winds, wet prairies, and poor diet. We lost about twenty pounds avoirdupois of ourself during the first spring and summer—the first half year of our pilgrimage there—when of adipose or muscular tissue we had never a superabundance, and can, therefore, speak experimentally and feelingly of meteoric influences. Let the reader imagine himself a practitioner of medicine there, and called, in the month of March, to see a patient twenty-five miles in the country (a not

uncommon ride in those sparse settlements), his horse up to the fetlock in the mud every step when on land, and when in the water, in crossing sloughs and fording creeks, no matter how tall the steed, the rider's feet must be unstirruped and folded kimbo on his nag's sides, or his boots will fill with water; let him fancy Borcas let loose, and unobstructed by hill or copse, bestowing his best endeavors on him the whole distance; let him consider the amount of disintegration of the system, blown off in the shape of insensible perspiration during the day's ride, and consequent call for repletion; and then let him seat himself at the humble family board, and partake of their best bill of fare, viz.:—fried bacon and hot biscuits, raised with lard; coffee, of course, to wash it down. The potatoes had all been frosted during the severe winter, the cabbages too; of turnips, the season of sowing was so dry they did not come up; of fruits they had none, for it was but their second year in the country, and it is rare that a settler raises any fruit short of a residence of ten years there. Now, the reader can almost make oath that, whatever may be the nature of the acute attack of his patient—phlegmasial, malarial, typhoid, or puerperal—*meteorology* and its influence over the state of the vegetable supplies—the absence of vegetables in the dietary—has special agency as causation of this case, or aggravation, at least. This is not a solitary picture, but a general illustration of the state of things we encountered in the winter and spring of 1835, the second year of our meteorological and medical observations at Springfield, Illinois, the present seat of government of that rapidly progressive State.

The Rains and Snows that annually fall in Illinois, equal, if not exceed, the average fall in the same latitudes and elevations, anywhere in the United States.* The whole State is a low country, and but little snow generally lies upon the ground, during winter. In the winter of the "deep snow," 1831–32, when all the eastern harbors nearly were closed by ice, tradition says: "the snow was about two feet deep

*It appears by the late work of Richard H. Coolidge, M. D., of the U. S. Army, on Meteorology, that a *maximum* amount of rain falls in Central Illinois—an amount equal to that which falls in Florida, and along the Gulf Coast.

throughout Middle Illinois, and that winter lingered in the lap of May." We have seen the snow some fifteen or eighteen inches deep, two or three times, in the course of nearly twenty years, and the lingering disposition of winters of this character, has sometimes interfered with planting and sowing in the spring, and abridged the crops of the succeeding summer and autumn; still it is undeniable that the want of snow during the winter, as a protection to the wheat, is generally everywhere felt in the State.

There is this about the rains, and which bears immensely on the vegetable productions, and, no doubt, the general health of the country; "it never rains, but it pours." From midsummer, on through the maturing of the latter harvest, the sowing of turnips, and of wheat, there is frequently great and prolonged drought, with excessive heat. We remember one season, 1838, in which there was no rain in Middle Illinois, not even a shower, from July to January; and the heat was excessive in the months of July, August, and September. The crops, particularly potatoes, turnips, cabbages, etc., were very short. The drought was severe and extensive; the smaller rivers, always disposed to dry up in summer, in Illinois, went totally dry that summer, and in some localities, the live stock strayed off in search of water, and famished in great numbers.

Recurring back to the year 1834, the same hot, dry character of season prevailed, following a frosty, blighting spring. The succulent vegetable crops and fruits were nearly annihilated, and the staple productions, wheat and corn, cut short throughout the State. The following winter was rigorous, and the spring and summer of 1835, excessively wet, so much so, as greatly to embarrass and abridge farming and gardening operations. About midsummer, excessive heat again set in, and this was the most sickly season ever known in the State. There were hardly well persons enough to take care of the sick. We paid that spring, twelve dollars a barrel for flour, in the heart of that wheat-growing country, and two dollars a peck, (eight dollars a bushel) for potatos, to plant in the garden. Seasons marked by the characteristics here given, have always, according to our observation, been at-

tended with great sickness and mortality; and we have been led to infer that there is an important connection between the state of the crops, or dietary of a country, and the state of the public health.

The reader should have personal observation of a thundergust, and experience one ten miles out on the prairies of Illinois, in order to fully appreciate the furious majesty of the scene, and understand the applicability of the adage "it never rains but it pours." The early spring not unfrequently, opens dry and beautiful, after the melting of the frosts and snows, and plowing, sowing, and planting, are opportunely accomplished; when, middle of May, the thundergust-rains set in, and not unfrequently keep the country deluged till midsummer; drowning out the hopes of all the flat prairie farmers, and washing out the labors of those, on the more rolling farms. We have seen acres of young corn washed out of the furrows, and whole fields of it submerged, and doomed to a yellow sickly abortion. Seasons of this character, are incompatible with the growing of a crop of potatos, the great staple succulent vegetable in all parts, and it proverbially happens, that one extreme follows another, and that the drought of the latter part of the season prevents the growing of turnips, and the maturing of garden roots, Indeed, the growing of garden vegetables, in general, is much neglected by the early settlers; culture with the plow in the cornfield, is the great and all absorbing business of the planting season; for, according to the crop of corn, so is the amount of the marketable staple, pork, from the annual returns of which, the hard working yeomen rely to pay for their dry goods, groceries, etc., etc.; so that we may say, there never was, during the period of our observations, a full supply of succulent table vegetables raised, consumed, and put up for winter use; and in the cold, wet seasons, there was a most lamentable deficiency, and this scanty supply was often frosted, and still further abridged for the want of cellars and root-houses for their preservation.

An incident, not irrelevant, is here introduced, illustrative of the deluging summer rains that fall throughout this prairie country, and the waspish character of the creeks, that are often swollen by a single shower so as to be past fording. A little

dried up rivulet, even—nothing, in fact, but *a place for a creek*—a gorge between the lime-stone bluffs, with, at most, but a stagnant pool now and then along the deep holes and turns, to mark its course, will verily assume a most formidable character, often in a few hours, so as to jeopardize, if not destroy the life of whomsoever may attempt to ford its swollen tide. The locality or scene of the incident is as familiar to us as "the road to the mill;" we have often stepped the stream at the identical ford where the drowning occurred, without wetting the sole of our boot, and laid hold of the boughs of the water-birch the fair one clung to, that, like the boughs of a Pope's willow, reach down their arms as if from heaven, to rescue such loveliness from the grave, or to mourn over it when consigned to an early tomb.

"*St. M* * * * 's, Pike County, Illinois, July.* 4, 1834.

"When I wrote you from Altas, my most cherished friend, I had no idea that my next communication would contain intelligence of a distressing nature; but do not be alarmed, all danger is now at an end, and we are once more safe in our own home.

"Returning on Wednesday last, from Altas, we were so unfortunate as to enter the little creek about six miles distant from here, without having previously examined it sufficiently. My brother mistook one bank for another, and we were drifting with awful rapidity down the current before he discovered his error. We instantly found it to be a case of life and death. I had the good fortune to seize a limb as we were drifting down, and the horses struggling under me kept me from sinking, while I threw up my left hand and took a firm hold of the branch. The instant the horses were from under me, I sank deep beneath the surface, and immediately in the centre of the stream. I knew my only hope for life depended on the branch I had clung to, and I continued climbing up until, at last, after dipping under six or eight times, I succeeded in getting so far up the limb of the water-birch, that my head was above water. I instantly raised it, and seeing my brother and his wife near the shore, I allowed it to fall back again upon the surface till he should come to my assistance.

They thought I had drifted down past them, and my brother gave his wife a limb to cling to, whilst he swam off in search of me. I had a bonnet in the carriage, tied up in one of his dark silk handkerchiefs, which floating in the water, had the appearance of my dark bonnet, and his coat floating immediately after it, looked like my black dress.

"Deeply seated must that affection be, which clings to the stem around which its tendrils have twined, even when the icy finger of death has touched the brow of its unhappy sufferer. Will it be a satisfaction to you to know that my last earthly thoughts would have been yours? if it will be, then know that when nought but a slight limb intervened between me and eternity, and my prayers for our rescue were ascending to the throne of the Most High, the thought of you, my most dear friend, was far, far more prominent than of myself. I knew what my feelings would have been in a reversed situation, and you, O horror! torn from me by a violent death. I judged you by myself, for you then did I feel, of you did I think, and my prayers for you were as fervent as for ourselves.

"But brief time had I for reflection, for I heard my brother call out in the most heart-rending tones of real anguish, 'O my God! where is she? there—she is gone—I saw the last of her!' and seeing Elizabeth where I first saw her, knew he meant me. I called out loudly, 'here—here—here I am—I am safe.' 'Thank God,' he replied, and springing up the bank, was rushing with frantic haste to my rescue; his wife calling out that she was sinking—her strength had become so paralyzed, when he said 'that he had seen the last of me,' that she must have released her grasp and sank in a few minutes. My brother appeared not to see, hear, or understand anything but that I was really living, and he was flying past Elizabeth, to save me from what appeared instant death. Elizabeth being very near the shore, would have been in less danger, had she been less alarmed, but as it was I knew she must go unless he saved her that moment; I, therefore, called out to him in a firm tone of voice, for Heaven's sake to save her first, and then to come to my assistance. He plunged in, and after struggling some time, he finally gained the shore with her. The limb to which they were holding, was just far

enough to prevent him from catching hold of anything firm upon the bold shore, and the grass, and twigs would break the instant they were grasped. He was holding the limb with his right hand, and Elizabeth's arms were clasped about his waist; with his left hand he was endeavoring to grasp something ashore; her arms began at last to slip, and she told him she was going! 'then,' said he, throwing his left arm around her, 'we will go together.' 'For God's sake,' I called out, 'do not give up; remember you have me to save.' This seemed to restore him to recollection, and with an effort almost super-human, he turned nearly round, and caught a projecting root—they reached the shore in safety

"When he came to my assistance, I considered myself almost in eternity, for his frantic manner and incoherent words evidenced, fearfully, the total loss of his presence of mind. I tried to calm him, told him to pitch me the end of some one of his garments, wading in and laying hold of the body of the tree, which, after rushing about like a mad-man for some time, he finally did, and thanks to Almighty God, we are all safe. Both horses were drowned—one of them, poor thing, had his neck broken. Their heads being martingaled down, never rose above the surface of the water. The barouche was filled with articles for house-keeping; some have been found, and my brothers accompanied by a neighbor, have gone to-day in search of more. The loss I most regret is my reticule, for it contained the precious lock of hair, letters and poetry. I could have wept their loss whilst trembling on the brink of eternity in the midst of the stream, but that I knew the indulgence of such a feeling at that most awful moment, was little less than sinful, and I banished it as well as I could, but it adhered tenaciously, and I have offered up many a prayer for their recovery—but God's will be done, if I must loose them—be it so. We succeeded in reaching a house that night, and the next day arrived at home. * * * * * * *

M. L."

The torrents of rain continue to fall till after the summer solstice, and sometimes until the middle of July, when the flood-gates of the firmament are closed, heaven's artillery ceases, and the raining process is imperturbably suspended.

We question whether one of Espy's mammoth fires, or Vaughan's heaven-piercing lightning-rods, or Cheop's or Popocataptl, even, would so galvanize the clouds as to induce farther out-pourings.* But there is no occasion for more the rivers and creeks are all out of their banks, and extend from bluff to bluff; every upland pond-hole, marsh, lake, etc., is filled; and all the sink-holes and hollows along the bottoms are brimmed, and stored with fishes and reptiles, doomed soon to flap and flounder in the mud, and then to pass into their ultimate elements under solar heat; the great body of the summit-level country is in an equivocal terraqueous condition, and the soil and subsoil saturated to the blue clay. Another play of meteoric phenomena now presents. The unobstructed sun is busy through Leo, Virgo, and Libra, in restoring back to the air this flood of waters; and under powerful insolation, high temperature, and rapid evaporation, and consequent elimination of electricity by day, and a reversed process, powerful upward radiation, dew-sopping, and cooling, by night; and these debilitating, extreme impressions of the vital stimuli prolonged for weeks and months, everybody, nearly, falls sick. The full development of these evident causes of sickness is witnessed sometimes early in July, while an abundant and young vegetation is fresh and luxuriant, even before the mid-day of its perfection, and never a blight has touched it; but while in its rankness, superabundance, and noon-tide of life, it takes from the air the gases hurtful to man and animals, and returns oxygen or pure vital air, belying the hypothesis of malaria from vegetable decomposition,

*It appears from the most modern views of meteorologists, that water is contained in the air in solution, as salt is dissolved in water; that electricity is the chief agent by which it is suspended—the electricity being produced by the friction of the air against the earth's surface; that evaporation is effected at the expense of heat and electricity; and that the air, surcharged with vapor, being specifically lighter, rises above the lower stratum of the atmosphere, which becomes an insulating medium between the clouds and the earth. To produce rain a connection must be formed. Espy has proposed to effect this by fire; Vaughan by a rod of immense elevation; and by thus drawing off a charge of electricity from the higher strata, portions of the dissolved water must be precipitated in rain. This view explains the meteoric phenomena of the low flat regions under consideration, and why it is either very wet or very dry; and, also, the reason why mountainous regions are more uniformly rainy and misty. It has been even suggested by Prof. Vaughan, that the pyramids of Egypt were built in order to the production of rain during the dry season.

unless it be thrown back upon the mould of preceding years, the constituents of the soil, which are now rather passing into new organic vegetable life again.

The Spring Frosts are sometimes severe, and occur late, blighting the fruits and crops extensively. Peaches, apricots, plums, and even apples, are rendered somewhat uncertain, owing to the severity and lateness of the spring frosts, incident to the sudden changes of temperature that occur after the showers set in, of which we have spoken. A frost occurred in the spring of 1834, about the middle of May, when the growing crops—corn, peas, beans, etc,—were several inches high, that killed, outright, all the crops, fruits, and tender vegetation, even the new growth of the forest twigs, a foot long, and foliage full grown. The forests presented an autumnal gloom; the leaves fell, and were succeeded by a new budding process, and the shooting forth of fresh foliage. The blighting influence of this frost in the spring of 1834, and the withering drought of the summer immediately succeeding, cutting off and abbreviating all the fruits and succulent vegetables of the country that year, has always appeared to us to hold a direct relation to the extremely sickly season that followed, viz.: the summer of 1835. Repeated coincidences of a like character have shown a relation like cause and effect to exist between short crops of vegetables and fruits, and sickly seasons.

The Autumnal Frosts are generally postponed until the summer crops are matured, and, therefore, do but little injury. Occasionally the crops are abbreviated by an early autumnal frost, but oftener by drought at this season. The native fruits are few, but the crab-apple and wild-plum are hardy, and generally abundant, though they are not sufficiently appreciated by the early settlers before orcharding can be cultivated, and the products help to protect the public health. The gooseberry and black currant are also natives, and when transplanted to gardens, and cultivated, are great bearers, and the fruits exceedingly fine; but their cultivation is also neglected. There is no disposable force to be spared during the rail-mauling and prairie-breaking years of a settler's efforts for a wide farm, and consequently fruit culture and gardening are

neglected, and the health of every family is thereby jeopardized.

The proposed limits of this essay will not allow us to discuss in full all points connected with the topography of this great, beautiful, rich, and wonderful State. Its geological formations, coal and other mineral deposits; its fauna, and the rich profusion of its native plants, must be passed over. All these are matters of interest to the lovers of natural science, but have little bearing on the subject of our Inquiry, which is strictly medical.

CHAPTER III.

ETIOLOGICAL DEDUCTIONS—MALARIA.

The foregoing topographical sketch, presenting an outline of the physical features, meteoric phenomena, constitution of the seasons, state of the crops and fruits, dietary, habitations and modes of life of the people, general and local climates—in a word, the sources of the *endemic influences* or causation of disease in Illinois, the field of our observation, where we were called year after year to treat the vernal waves of the nursing sore mouth affection, will enable our readers, we think, to catch a glimpse of the leading element in the etiology of this anomalous disease, viz.: *defective alimentation, or impaired nutrition.* Without fear of successful contradiction, from nearly twenty years close observation, we charge the remote cause of the disease to this source, in all cases. The coöperating and exciting causes are numerous, of course, but the inlaying of the latent morbid diathesis depends on defective or abridged nourishment. The disease is a lesion of nutrition. Its vernal waves follow blights and scarcity as pestilence follows famine; and yet it often results from restrictions in diet, either under medical direction or self-imposed,

in families where there is plenty. The thousands of ways wherein the natural laws of diet are habitually abused, either from gluttony, ignorance, or want, cannot be specified, and they all tend to induce a latent, accumulative morbid condition of scorbutic type, ready to be lashed into activity by thermometric, emotional, and other exciting causes.

It is contended by Dr. Drake in his work on the "Diseases of the Interior Valley," that the meteoric causes of disease, as summer heat and vicissitudes of the weather, never inlay a latent, morbid diathesis of accumulative tendency. This opinion is maintained in arguing in favor of the hypothesis of a substantive malaria, which he, with other writers, holds to be accumulative in its latent incubation in the human system—the cause of the so-called malarious fevers. Natural causes being held to be inadequate to produce the fevers, the hypothesis of malaria is assumed to be negatively proved by its effects—the fevers! If this be inductive reasoning, we are unable to see it. Much more philosophic is the following from Dr. Drake's work, p. 451. "The students of Lane Theological Seminary, near Cincinnati, left to decide on their diet, had nearly abjured animal food, and many subsisted on bread and molasses, or other articles of a like kind, at the same time repudiating tea and coffee. Their habits were cleanly and their lodgings not crowded. Now the outbreak of fever in this little community, independently of known contagion, sustains the conclusion that deficient nourishment is one of its causes-"

Verily in the absence of contagion, filth and foul air, in the above illustration, it appears to us that "deficient nourishment" is proved to be the *sole cause* of the outbreak of the fever, that is, sole *remote* cause, (the season of the year is not specified, so that we cannot judge what the *exciting* cause or causes may have been); and if deficient nourishment, or a one kind of diet, as bread and molasses, will thus inlay and accumulate typhus (we presume this fever to have been typhus as contagion is spoken of), why not bilious or malarious fever as well, the meteoric exciting causes of summer heat, etc., favoring its development? This looks much more rational to us, and seems infinitely more probable than that it is produced

by a malaria. The enlarged livers of starving geese artificially exposed to high temperature illustrates this view—a scorbutic tumefaction and softening of the viscera as is often seen in malarious fevers.

Ancient philosophers and physicians, and Hippocrates among the number, relying more on observation than books; reasoning from the facts before them, ascribed the cause of pestilence to extraordinary seasons, in the main; and they made no distinction in the cause of the different epidemic forms of disease: all were ascribed to the same natural common causes. We question whether the moderns have advanced much in etiology.

Possibly the advocates of malaria may consider their cause greatly strengthened by our topographical sketch of Illinois, and see the evidences of a substantive miasm so plainly on the rich, odorous, reeking river bottoms, that it may seem to them they can almost cut it with a knife; can all but see it in the shape of mephitic, bilifacious fumes gluing and gumming up the portals of life of its unsuspecting victims, coursing their veins, implanting its leaven-like or catalytic essence in their livers and spleens, and by zymotically changing the vital processes of secretion and assimilation into a kind of fermentative eremacausis, have things all its own way; perniciously converting each molicular, parenchymatous particle, into a living, moving, growing, atomic animalcule, whose personal importance though individually beneath the powers of the microscope, is nothing the less evident when taken collectively or massively, for spleens which normally weighed only two pounds now weigh ten, and livers and gall-bladders in proportion. It is analogically evident that the assumed miasmata must be animalculæ, for the heat and slime of the bottoms force into existence, nolens volens, the products of decay, which like old cheese quicken with a sort of putrefactive vitality, and can surely be smelt if not seen, and can easily be imagined to take wing by day and go to roost at night, seeking the interior of the cabins in order to keep warm and dry like other well bred fowls and insects: furthermore the musquitoes, gnats, flies, devils-needles, toads, turtles and turkey-buzzards are as abundant as the insect swarms

that an offended God sent upon the hosts under the hard-hearted Pharaoh, therefore the miasmata must be of animal character or nature—a sort of animal steam, or invisible quintessence of *suspected* animal life, well enough proved by its odor and poisonous effects, the fevers, as also by its being killed by the frosts, though never yet isolated or seen by mortal eye aided by microscope!

Again, the same hot-house effect is apparent in the vegetable world as in the animal, and there are microscopic plants as well as animals—parasitical, ergotizing fungi, that revel in the milky juices of the berry, the very heart's blood of the vegetable kingdom, and as the ponds are being mildewed over with green fungi, the grains and grasses ergotized, and the sporidia are buoyant enough to be wafted abroad in the air, it strikes another class of sophists that there may be, peradventure, a sort of secret coalition going on between these invisible sporidia and the vital processes; a kind of runaway match between the vegetable and animal cells, or a cryptogamous union of animal and vegetable life; in other words, those parasitical fungi are ergotizing the livers, lungs, hearts, etc., of the squatters who have invaded their abodes—growing liverwort, lungwort, heartsease, or rather disease, etc. The truth is, there are so many arguments to sustain both of these very plausible and ingenious, not to say probable theories, to be gathered from the Illinois bottoms, that the foundations of malaria will be considered strengthened and extended by our argument no doubt, and had we not in our chapter and topography disclaimed faith in these hypothetical dogmas altogether, both parties would claim us, we feel confident, and bestow most cordial and fraternal eulogy, if not vote us a silver service for our original views. There seems to be an opened-mouthed readiness of anaconda capacity to swallow monstrous absurdities, which block up the way and leave little room for the ingress of truth.

After this admission that the topography of Illinois is favorable for the production of malaria on either the animalcular or cryptogamous hypothesis, and the support given the two theories by us, we claim to have sufficiently propitiated the faithful in malarial orthodoxy to warrant us in offering a new

view, without giving offence, to wit: that Illinois is also, topographically very favorable for the development of *scorbutus* in the natural way in which that is produced, whether by the use of salted fish and meats, especially pork, or by the lack of vegetables and fruits; or from cold damp air; or cold winters and wet springs; or droughts, frosts and blights; or intense and prolonged summer heats and humidity; or all these causes united with an abridgment of suitable food. And it is proper also, in this connection to note that it is said the majority of the victims of land scurvy are women. Dr. Good, in treating of land scurvy says, the subjects of it are "principally women." This strengthens our deductions as to the etiology and pathology of the nursing sore mouth affection so prevalent in Illinois, if it does not afford a clue to the cause of the great amount of malarial disease or general sickness. For it is notoriously true that the women of Illinois are subjected to the debilitating effects of not only rapid breeding and nursing, but also poor diet, damp, cold cabins, want of servants, home-sickness, agues and fevers, dilapidated health and broken spirits.

Lind says, "They who live in swampy inland soils, near morasses, or encompassed with thick woods and forests, or in countries subject to inundations from lakes or rivers, or where there are corrupted, stagnant waters, where the sun has not sufficient influence to elevate their vapors to a proper height above the earth, being continually surrounded with unwholesome fogs and mists, are subject both to scurvies and agues. We may generally observe them to have a pale wan color, and scorbutic spots on the skin; to be of a dull, inactive disposition; their scorbutic discolored countenances bespeaking the place of their abode; whereas, those who inhabit the mountains, or more dry and healthful places, are remarked to be agile, active, well colored, and long-lived. Those who live in the higher apartments of a house, are observed to be less liable to those disorders, than others who live on the ground floors of the same houses. The poorer sort of people, who live in damp vaults and cellars under ground, are most afflicted with symptoms truly scorbutic; as are likewise they who are confined in dungeons, and damp unwholesome prisons.

We see it most common among the poorer sort of people in the before-mentioned situations, who feed much on dried or salt fish and flesh, and the unfermented farinas, without using green vegetables and fruits. The lazy and indolent, and those of a sedentary life, are most subject to it. Those that are of a cheerful and contented disposition, are less liable to it, than others of a discontented and melancholy mind. They who are much exhausted and weakened by preceding fevers, and other sickness, or those who have unsound and obstructed viscera, as after agues of the autumnal kind, are apt, by the use of improper diet, to become scorbutic."—*Treatise on the Scurvy, p.* 91

Thus the causes and the coöperating causes of scurvy, are found by our researches, to exist to an eminent degree in Illinois, and to fall with unerring certainty and leaden influence, in the pathway of breeding and nursing women. This much conceded, these facts established, we shall enter no special plea in favor of the existence of any other remarkable cause or causes of disease, further than exist elsewhere and everywhere; either constitutionally, inherent, or dependent, on meteoric, or atmospheric vicissitudes. The truth is, diseases must have for their causes, principles as extensive as their effects; or in other words, there must be an adequate cause. If defective alimentation is not adequate to the production of the nursing sore mouth affection—if partial and prolonged starvation is inadequate to produce debility, anæmia, and a general breaking down of the powers of life, with laxity of the tissues, and local ulcerations, why, away with it —discard it. But, if it be adequate to produce these effects—if these are *the natural consequences*—retain it as the only common-sense view to be taken of the matter. If "deficient nourishment" is adequate to the production of typhus fever, as appears above, where shall we limit its power for evil? What form of disease may it not produce? May not the great waves of extraordinary sickness or epidemics, malarial or otherwise, depend upon extraordinary seasons, years of blight, and a general abridgment of wholesome food? May not the ancients have been nearer the truth, in ascribing pestilence to extraordinary seasons, than the moderns, to a hypothetical malaria, or poi-

soned air? We think so. Nor can we subscribe to the doctrine of the more pious masses in all ages, that extraordinary sickness comes as an expression of Divine displeasure, or the vengeance of God.

As for the air, we are quite sure that a most remarkable salubrity is maintained in this element, the year round in Illinois, uncontaminated by either animal or vegetable decomposition; for a succession of flowers literally carpets the State from May to October, till frost sears the luxuriant verdure, when the fires set in and sweep over the whole prairie country, and the rank grass and herbage of the bottoms, the alleged strong-holds of malaria, afford the hottest fires, and yield the greatest amount of purifying ashes; the country is an open champaign plain, and a healthful breeze is always playing, as at sea, so, that if there were any pestilential miasms generated in this or that locality, from vegetable or animal decomposition, they would be instantly scattered to the four winds of heaven, and so diluted with an admixture of pure oxygen, fresh from the laboratory of a most healthful vegetation, as to pass harmlessly over every man, woman, or tender infant in the State, were each focus of production equal to the combined capacity of a thousand first class chemical laboratories and the product as deleterious, as the choak-damp, or even sulphuretted hydrogen gas. One of those steady-pressing summer and autumn "south-westers," that incline the very trees to lean permanently to the northeast, would waft all the miasm out of the State in a single day, and land it in the Polar Seas, or elevate it into the upper regions of the air, to shine by night with phosphorescent putridity, a beautiful blushing Aurora Borealis.

Nor is there contamination of the air from telluric emanations or mephitic exhalations in our judgment, although this opinion is entertained by many citizens. We knew an intelligent farmer who not only believed it, but who had actually fenced round the locality from whence he contended the putrid poison oozed, in order to prevent men and cattle from encountering it! But there is no proof whatever of any poisons being exhaled from the ground. The oxides or salts of the usual bases found in the most fertile soils exist in great abundance,

such as lime, potash, soda, alum, etc., etc., indeed there is every reason to believe that Nature's most perfect standard is attained as regards the constituents of the soil, and all the emanations or exhalations, we have no doubt, are as perfectly harmless as they were in the garden of Eden. The truth is there are no metals, such as arsenic, mercury, and the like, known to be poisonous, and there are no volcanic heats in the earth to volatilize them if they were there; besides, it is the business of oxygen to oxidize all offending or noxious materials whether in the earth, air, or water, and the office of the vegetable kingdom to absorb the carbonic acid thrown into the air by combustion, respiration, etc.

Nor is the cause of the pestilence, either, in the water. The waters are pure, save containing some of the soluble salts of potash, lime, etc., of the soil, before spoken of. The surface-water is all rain-water, and therefore as pure as distilled water, and the well-water is the same filtered through clay and sand. There are many persons, however, who think that the cause of all the sickness exists in the water, and that spring-water is particularly deleterious. This prejudice arises probably, from the fact that the most desolating mortality visited the early colonists who sought locations where water was afforded to hand by springs. They did not know that living upon bread and meat mainly, for months and months, would certainly destroy them, though their waters were distilled from heaven, and as pure as nectar. So far as Nature has done her work, then, in the soil, the air, the water, the vegetation, the animal kingdom, we believe all is right, and we must look to some other sources and circumstances for the cause or causes of the pestilences that are the scourges of new countries.

Comfortable or uncomfortable habitations have great influence. The early settlers of new countries are the poorer classes mainly. They have been reared without knowing the luxury of a comfortable habitation. When they emigrate they construct rude, cheap, temporary cabins, without cellars, or windows save perhaps a small opening opposite the door capable of being closed by a bit of a board. The family all sleep in this one room on the ground floor, and cook and eat

in it also. This rude cabin frequently serves the family for a residence for ten years. There is no fault to be found, in the main, with the building sites; they are generally along the margins of the rolling prairies, and if the cabins had second story chambers for sleeping apartments, and cellars underneath, much sickness would be avoided. The northern and eastern margins of the groves were noticed as being the more healthy locations; doubtless because they afford more shade, or greater protection from solar heat. A residence within a grove is still greater protection. It is heated less by day and cooled less by night, and these sudden vicissitudes are the main exciting causes of the fevers. A residence on the bottoms is always favorable to health in very *wet* seasons; the temperature of the surrounding waters is not elevated by solar heat, and there is none to be radiated at night—the temperature of day and night is equalized. A residence on the unbroken prairie illustrates the same principle: we have known immigrants thus situated to escape sickness for two years, but on breaking up a large extent of the prairie surrounding the cabin, every member of the household sickened the third summer—the rank grass absorbs little heat by day, and the upward radiation is therefore but very moderate at night; but when the black friable soil is turned up, it absorbs heat by day so as to become burning to the bare feet, and radiates it with great facility at night, black surfaces being good radiators. A bottom residence thus surrounded with tilled lands is a lazar-house in a dry season. It is an oven by day and a cold cellar by night; a chill and a fever every twenty-four hours regularly; and there is no care taken to guard against the evil—it is a luxury to be exposed to the night air.

It is only from careful observation and a review of all the circumstances surrounding the persons falling sick, that we can form any just conclusions as to the causes of the sickness, and then they are so obscure as nearly to elude our search. Old doctrines and dogmas of the schools, explaining the causes of disease on hypothetical foundations, as malaria, epidemic influence, endemic influence, etc., cloud the vision and stand in the medical philosopher's way. It is easier to follow in the high-way of error than to search and scan the natural

laws and develop truth by inductive reasoning. It is only when the causes of disease are very prominent and stand out in bold relief, as they did in the character and constitution of the extraordinary seasons of 1834 and 1835, a most desolating epidemic following a dreadful blight and drought that destroyed the fruits and vegetables, and sickness setting in under remarkable meteoric phenomena, to wit: extreme heat and humidity, that the mind can hope to seize hold of the leading facts as data and to trace cause and effect, and weave a reasonable argument that shall explain the causes of disease satisfactorily and convincingly to the minds of others.

Succinctly, then, what are the facts before us? why, as follows: a blighting frost in the spring of 1834, cut off all the summer fruits, great and small; a scorching summer drought followed, that withered vegetation and nearly annihilated the succulent vegetable crops; and a whole people were left for a twelvemonth on a bread and meat dietary, mainly. The spring and summer of 1835 were excessively wet, and the scorbutic diathesis pervaded the public, (we speak from observation) everybody was under its weakening influence, more or less. Early in July the heat, as well as the prevailing humidity, became excessive, and the heat continued through the summer, the fall becoming dry. Under these circumstances the whole body politic nearly, men, women and children, were prostrated with intermittent, remittent, pernicious and continued bilious fevers, diarrhœa, dysentery, nursing sore mouth, cholera infantum, etc.—summer complaints of every character and grade of severity. Three or four times in a cycle of twenty years we saw this fatal drama repeated: similar meteoric phenomena, or extraordinary seasons, were followed by similar results. Now what were the causes of the epidemics? We discard the doctrine of malaria because there is no proof of there being any such product of vegetable decomposition, besides, the fevers set in while vegetation is young and fresh. The dogma is but an hypothesis, and therefore unworthy of belief. Natural causes are sufficient to explain the phenomena. Extreme impressions of the natural vital stimuli produced the whole mischief. Extreme meteoric manifestations, or extraordinary seasons cut short the supplies;

extreme deficiency of alimentation or want of food of proper quality and proper kind, inlaid the scorbutic diathesis; and extreme summer heat operating on this latent morbid condition excited or developed active diseases. Nothing is plainer to us than that deficient and defective alimentation, a partial famine in other words, inlaid a scorbutic taint generally, or was the remote cause of the mixed up, intercurrent, fatal epidemics of 1835. The inordinate application of summer heat to systems thus debilitated by latent scorbutus; or rather we should say, excessive insolation by day and excessive cooling by night, and of course excessive electrical disturbance of the nervous systems of persons, explain to us, the rational causes of the development of the epidemics, without any occasion for a specific miasm. Besides, if we admit a miasm as the specific cause of fevers of the ague type, we must also admit one for diarrhœa, dysentery, nursing sore mouth, cholera infantum, and every other epidemic form of disease that is cognate with the fevers.

Deity has not constructed this round world in such a way that it can pursue its annual circuit round the sun, presenting the beautiful economy of the seasons, without subjecting the latitudes on either hand, to extreme thermometrical changes. Man, physiologically, is adapted to a medium impression of heat, of about 65° F., and in his digestive economy, is as essentially omnivorous, as the bullock is herbivorous. A reasonable range, however, both in the natural law of calorification, as well as alimentation, is compatible with health; but great and sudden changes in either, and extreme and prolonged impressions deviating from the standard for health, are very pernicious, and soon induce a pathological condition. So of air, light, and electricity; there is a medium standard where the impressions are favorable to health, and beyond which they favor disease. Organization, age, sex, temperament, complexion, habits, diet, season of the year, state of health, etc. etc. etc., are modifying circumstances to shape the character of the disease. One system or class of persons, will take on ague, another, pernicious fever, a third, dysentery, a fourth, rheumatism, a fifth, neuralgia, and so on; while all will show the scorbutic impress—the scorbutic palor and de-

bility, and the nervous disturbance and sanguiferous tumult of fever; and the most common scorbutic form, or remittent type of fever, will predominate. Pregnant and nursing women will have puerperal anæmia, a variety of land scurvy; scarlatina, measels, and whooping cough, will assume an aggravated character in the winter and spring, and cholera infantum, in summer. None but the most organically perfect, of hale constitution, will escape the sickness. Cause and effect are apparent, and the causes of disease are thus seen to be known natural causes, or the effects of extreme impressions of the natural vital stimuli—food, air, and heat. Pestilence is thus explained on rational principles, as resulting from adequate natural causes. When adequate natural causes are shown to exist, why look for others? Why substitute the hypothesis of a malaria, when the fevers are susceptible of explanation on principles consonant with reason and observation? If a floating malaria or poisonous gas could be detected in appreciable quantity, in the atmosphere of every locality, prior to the breaking out of pestilence, there would be reasonable foundation for ascribing the fevers to it; but it should of right be isolated, collected, and its physiological effects tested before the doctrine should be received. This has never been done. It is the delight of the Creator to see earth, air, and water, teem with life; all beings to fill their respective spheres, and to die by *natural causes*, and man is in the category. There is no precedent known in the two thousand years' history of medicine, of the diffusion of a subtle poison in the air, the supposed source or cause of epidemics. Natural causes are adequate to their production: this should settle the matter. The "*to theion*"—an occult poison in the air, something divine, or beyond human investigation, admitted by Hippocrates, and some other ancient physicians, when the relation of extraordinary seasons was not apparent, can be wholly dispensed with, and also the *malaria* of the moderns. God, in his government has never breathed an occult, inscrutable poison into the air, assassinating his creatures indiscriminately, men, women, and children. It is irreconcileable with the goodness of God. But admit an infraction of a great natural law, by everybody, for months, as must happen in a

partial famine, and the reason why men, women, and children perish by sickness, when hot weather and great, and sudden vicissitudes occur, is obvious. God rules by general laws, and these not beyond man's comprehension. Malarious fevers occur at sea, are produced on ship-board, where there can be no marsh malaria. Also in arid deserts, where no vegetable or animal decomposition is going on. Also in the cool, dry mountains of California, where never a marsh or lake existed, amid pine groves and rapid running streams, where no rain falls for six months of the year, and no vegetation, comparatively, is produced, subject to decay. One such example is fatal to the hypothesis of malaria, and a dozen may be cited. The true doctrine was undoubtedly taught by Etius, an eminent physician of the fifth century, to wit:—that epidemics were the consequence o*f bad food, want of food, grief, sloth, and abundance succeeding to want*—developed by a hot, damp state of the weather: and, that if a person takes moderate exercise, and is temperate and regular in diet, he escapes. This is both truthful and rational, and is conformable to our experience in the main. A hot, dry state of weather, however, will develop an epidemic after want of food, grief, etc; have inlaid it, as well as a hot, damp condition. In 1797, history records, that the bilious remittent fever, finally becoming so aggravated as to be called the yellow fever became epidemic in Baltimore, under a hot, dry state of weather. A very damp state of the weather set in, and continued two weeks, during which time there were no new cases of yellow fever developed, but all was changed to dysentery, the epidemic still on the increase. At the end of two weeks, the weather became hot and dry again, and the dysentery ceased, and yellow fever again resumed its sway.

"Typhoid fever often supervenes in well marked regular bilious remittent fever; in other instances the symptoms of the two diseases are so interfused as to render the distinction as to which form of fever predominates, a matter of difficulty. if not impossibility."

"The interoccurrence of cholera and typhus, was well marked in cases occuring this year, 1851, in St. Mary's Orphan Asylum."

"The epidemic [1851] partook of the nature of cholera, dysentery, and scorbutus. In the early part of its reign it partook of the nature of cholera, there being profuse serous discharges. As the warm summer months set in, it partook of the nature of malignant dysentery. Hemorrhage from the bowels was always in the ascendant in the last stage. In many cases a scorbutic appearance of the parts within the mouth and throat was presented, the gums becoming distended, spongy, and separated from the teeth, with dusky redness of the fauces and parynx, and profuse hemorrhage from these tissues." (*Reyburn's Report in Transactions of the A. M. Association, on Diseases of Illinois and Iowa, for* 1855).

From a survey of all the facts before us, then, it appears to us that Illinois and all other newly settled countries are rendered sickly by the circumstances and accidents that throw the inhabitants upon *bad and unsuitable food*, inlaying the scorbutic diathesis; which condition has been heretofore overlooked in accounting for the summer epidemics; the whole difficulty having been ascribed to *malaria*. Ignorance of knowing how to live is a fruitful cause of sickness. Many years must elapse before fruits can be cultivated plentifully. Vinegar and pickles are generally eschewed. Pork, bread, and coffee are often the main articles of diet for months and months together. The vicissitudes of the weather and extreme heat are the exciting causes. The alternations of intense insolation by day and rapid cooling by upward radiation at night, subject all to the prototype phenomena and periodicity of fever and ague. These impressions or alternating vicissitudes of temperature are extraordinarily great on the low, confined, porous, black, alluvial Illinois bottoms, especially when under cultivation. They are bake-ovens from midday till evening, and cold cellars from mid-night till morning. So of the rice plantations of Georgia; the streets and alleys of New Orleans; Pontine marshes; and African rivers. None but negroes, who can radiate heat like a black tea-pot can stand it. Nor can they escape sickness if a previous faulty dietary has inlaid a scorbutic taint. We differ from Dr. Drake; we think these extreme meteoric impressions, these

intense diurnal alternations of heating and cooling, drying and dewing, that operate on persons in the Illinois bottoms, and all other model malarious localities, are sufficiently disturbing influences of themselves to derange secretion, impair the appetite and digestion, and prove the first link in the interruption of the function of nutrition, and the inlaying of the scorbutic diathesis. The almost certain attack of unacclimated visitors to such localities warrants this inference. A whole boat's crew have contracted fever and perished, so history records, from sleeping one night ashore, on an African river. We judge *they* must have been all rendered scorbutic by the bad dietary on the voyage before landing. The shock of sleeping ashore, or vicissitude of temperature was but the developing cause we think. Still, the slower attacks of unacclimated persons visiting New Orleans, and other southern ports, in accredited health, rather tend to sustain the views that the extreme impressions of the meteoric vital stimuli there encountered begin the work of impairing the health—elimination is impeded through innervation of the overtasked secretory apparatus. The nutritive function is thus attacked at the other end of the chain. Effete matter is locked in. Assimilation is obstructed and cannot go on. Digestion is at a stand. The appetite gradually fails until it is wholly gone. The scorbutic taint is begun to be inlaid. Hence, as Lind says, "they who reside in swampy inland soils; near morasses; or in countries subject to inundations from lakes or rivers; etc., are subject both to scurvies and agues." It appears to us, that there are known causes of disturbance enough present, in all such localities, to account for the aggravated forms of disease, without resorting to the hypothesis of marsh malaria; certainly there are after extraordinary seasons of blight. Nobody can escape scorbutus then. An epidemic is a matter of course. We have abundance of evidence derived from observation to satisfy us that defective alimentation, coöperating with the meteoric endemic influences named, inlay the scorbutic taint deeply, and that it is a hidden and overlooked element in the causation of the severe bilious fever epidemics of Illinois. We infer it to be the predisposing cause of all malarious fevers—of the wide-spread prevalence,

aggravation and malignancy of bilious fever epidemics during certain years, and the vast amount of general sickness that then prevails.

The difficulties of malaria are too numerous to mention, but we will cite the reader to one.

A healthy New Englander goes to Illinois and remains one summer, returns home in the fall, passes through the winter without anything remarkable occurring, but when warm, spring weather comes on, the individual sickens with malarious fever—has a vernal ague. Now the assumption is that a positive poison, *malaria*, was received into the system in Illinois, which incubated till spring, and then developed its peculiar effects.

How absurd the doctrine would be, even if we had proof of the existence of a poisonous *malaria*, or gas—had it isolated and bottled. The retention of a known poison so long in the human system, contravenes the conservative laws of physiology which eject and eliminate with dispatch all poisonous substances from the body; and is contrary to every known example in toxicology. But when we consider that the poison is only *supposed* to exist, to what an impoverished medical philosophy we are wedded! Shade of Hippocrates—shade of Etius, save and defend us from such puerile nonsense.

Our explanation of the matter is this. The healthy New Englander, by a summer residence in Illinois, contracts latent scorbutus, which often lies years in the system; in other words, defective alimentation and the coöperating endemic climate inlay the scorbutic diathesis, which lies latent till spring. Opening hot weather excites a vernal attack of active disease.

Now if we are asked why it is developed in the form of an ague and not typhus fever? We reply as before observed, that this depends on the accidents of surrounding conditions and circumstances, such as constitution, temperament, age, sex, diet, habits, locality, season of the year, degree and stage of scorbutic taint, etc., etc., as well as the meteoric conditions present, or exciting causes.

It has been remarked by the older authors on scurvy, and

Bisset in particular, that fevers, are apt to supervene when scurvy, as an epidemic, is beginning, and declining. *The degree and stage of the latent taint* have great influence in shaping the form of *active disease.* In illustration: the extraordinary heat and blight of 1854, inlaid the scorbutic taint generally throughout the western States, which manifested itself extensively in the spring of 1855.

"The Vincennes Gazette of the 2d inst., mentions that the scurvy prevails to a considerable extent in several neighborhoods along the line of the railroad. It is of a mild type, and easily checked. It is supposed that the disease has been produced from a too constant use of meat diet, owing to the absence of vegetable food." (*Cincinnati Commercial, April,* 1855).

This state of things existed not only about Vincennes, in Indiana, bnt throughout the western States, and indeed throughout the United States, in the spring of 1855. The summer of '55 was exceedingly favorable for the growth of vegetables and fruits; they were abundant, cheap, and of excellent quality, and those most favorably circumstanced were healed. But what happened in the autumn of 1855, the following extracts will show:

"*The Ague Epidemic.*—The Indiana Daily Journal of the 3d inst., says:—'We have no doubt there is more sickness in Indiana this fall than ever before. Not of a fatal character, it is true, but distressing and expensive. The chills have come, like the locusts in Utah, devouring the accumulated health of many summers. Those who have boasted themselves chill-proof, have shaken like a coward entering a battle, and many a robust constitution has felt its clammy coldness overspreading them like a November drizzle. From every quarter of the State we hear the gruntings of back-aching, side-racked patients, and the combined fevers of all the afflicted would make a heat sufficient to set up a young volcano.'

"The Danville Advertiser says:—'There is more sickness in our county at this time than there has been in many years. The same report reaches us from all parts of the State. It does not appear to be of a fatal type, however.'

"The Fort Wayne Times says:—'For many years this North-

ern region has not suffered as during this. The mortality has not been great, but affliction with fever and chills has been extensive, as is evidenced by the multitude of pale faces.'

"The Portland (Jay county) Journal says: —'There is at this time more 'chill and fever' throughout this county than ever known before; why this is so we cannot tell, unless it be the effect of the great amount of rain which fell during the forepart of the season.'

"The chills are not confined to Indiana, but are prevalent throughout the country. The immense amount of water that has made this a continent of mud for months past, and the tropical luxuriance of vegetation, account for the unhealthiness of the country." (*Cincinnati Commercial of October*, 1855).

The "ague epidemic" prevailed at the same time in the city of Philadelphia; and the yellow fever in Norfolk and Portsmouth. There was some general cause for all this; and does not our explanation unfold it? mud and water, and vegetation do not abound in Philadelphia.

Why a bilious continued fever, or a bilious remittent fever, or a pernicious fever, instead of an ague and fever, (all held to be malarious fevers) is ever developed, depends on conditions not fully understood, but still we are able, measurably, to appreciate the conditions, such as we have named. Why the acute attack should be developed in one individual, then, as an ague, in another as a rheumatism, in a third neuralgia, a fourth typhoid pneumonia, a fifth puerperal fever, a sixth nursing sore mouth, a seventh dysentery, an eighth continued fever, a ninth erysipelas, a tenth insanity, and so on, is owing to the surrounding conditions and circumstances of each locality and case; the puerperal condition would naturally enough take on puerperal peritonitis; under lactation the nursing sore mouth would as naturally set in; and so on. There is nothing repugnant to sound sense in this view. It is sustained by the analogy of the widely differing forms of the malarious fevers. And it is surely as reasonable of belief as the supervention of typhoid fever on bilious fever; of yellow fever on bilious remittent fever; of dysentery on yellow fever, and vice versa. Indeed the intercurrence of these

formidable and malignant diseases, and of cholera and typhus; and cholera, dysentery and scorbutus, examples of which we have given, prove this to be the only rational and philosophic view—and we believe the truthful, scientific, and only possible explanation or rationale of the matter.

Postscript.—We are happy to know that we do not stand alone in ignoring out and out the mischievous hypothesis of malaria. Dr. Black of Ohio, and Dr. Gayley, and Dr. Bell of Philadelphia, have each protested against this Italian absurdity of Lancisci. After our paper was written, Dr. Black's partially coinciding views came to hand in the March No. of the New York Medical Journal, 1854, from the spirit of which our paper received retouches. Since the manuscript was put in the printer's hands, our attention has been called to Dr. Gayley's able inaugural thesis, which demolishes the hypothesis. It is to be found in the American Journal of the Medical Sciences, Jan. 1849. It appears, through a note at the close of said paper, that Dr. Bell had previously, but unknown to the author, published similar views in said Journal, No. not given.

Now Dr. Black and Dr. Gayley, both, fairly refute and upset, in our judgment, the received doctrines of malaria. They show conclusively, that malarious fevers occur where marsh effluvia never existed, and never of possibility could be present; and Dr. Gayley cites, Dr. Wood, and, other authors who bear testimony to the same undeniable fact. One example and the hypothesis falls.

The heating and cooling—the sudden alternations of temperature between day and night, or the endemic, meteoric vicissitudes, of which we have treated, are held by both Drs. Gayley and Black to be the cause of the so called malarious fevers, but their rationale differs from ours. Our views coincide this far; we say they are the secondary, *exciting*, or developing cause, after an abridgement of the vital stimulus of nutrition, which we hold to be the *remote* cause, has inlaid some degree of the scorbutic taint. And we admit further that, in some cases, under some circumstances, these sudden vicissitudes in the meteoric class of vital stimulants, appear

to *first* conspire, at all events coöperate to impair the nutritive process, the *sine qua non* in all malarious diseases.

Our paper by no means furnishes all the proof of the truth of this new doctrine. We have hardly drawn an illustration from therapeutics. Why does common salt cure ague? Because it re-vivifies the nutritive function and is indispensable to health, in its elements. So of acids; so of the potash salts. They are our most valuable antiscorbutics, either revivifying the old basic elements in the road of excretion, or supplying new elements to the tissues. Even the arsenite of potash is not rendered too vile by its poisonous association. Quinine in small doses lifts up the depressed nutritive function, and in heroic doses eliminates by sweat the effete matters that dam up the waste-gates of nutrition. Our philosophy affords the *rationale* of these every-day truths; familiar, to be sure, as house hold words, but heretofore mysterious and inexplicable. The *sympathy* of the solidists, *the change of the fluids* of the humoralists, the *similia similibus* of the homœopathists, the *contrariety* of the antipathists, and the *counter irritation and heterogeneity* of the alopathists never answered these questions. Our view shows *how* remedies operate, and how both the fluids and solids are healed—makes a common sense matter of disease and the art of healing; simple as truth ever is when seen and understood. But we must not anticipate matters, the discussion of which properly belongs to the last part of this work, our essay on scorbutus.

CHAPTER IV.

CASES AND DEDUCTIONS.

WHETHER the reader of the foregoing etiological deductions, has perused them to cavil at the substitute offered for the malarial hypothesis, or more sensible, to endorse it, is not a matter of any importance, so far as the nursing sore mouth affection is concerned. It has never been held to be a malarious disease; and though he may still be lured by the ignis fatuus malaria, and be led on to his doom into the swamps and mists of hypothesis, in pursuit of the cause of agues, he will have to adopt our simple and rational deductions, as to the cause and nature of the nursing sore mouth affection; we feel confident he will, before finishing our analysis of cases. It is not material, therefore, whether we have travelled out of the record, as the lawyers say, or not, in what we have offered on the subject of malaria. Our intentions have been good whatever may be the fruits. The hoary phantom has stood in our way, and provokingly thrown dust in our eyes for more than twenty years, still stands obstructing the pathways of medical science, and we have at last attempted to transfix him and clear the way with the only weapon that can do it, the quill, and to set up a legitimist, the rightful prince, in this usurper's boots. If we have failed, inductive science has sustained no injury, and we may still find consolation in the words of the poet:

"In great attempts 'tis glorious e'en to fail!"

But we have not failed: we have set the legitimate sovereign and ruler of swampdom and blue-nosed ague on the throne—a rational governor whose attributes are explicable, tangible, and comprehensible, and who is doubtless the true captain or prime minister of the realms of general pathology. We have not, then, proved too much for the specific object sought in this inquiry.

No one at all conversant with the nature, history and causes

of scurvy, will pretend to gainsay this obvious truth, this prominent deduction, that Illinois, topographically, eminently favors the development of scorbutus. Its paludal bottoms, breathing hot and cold with the same breath; its swampy uplands; its floods and inundations; its stagnant waters; its summit level morasses; its cold winters and wet springs; its frosts and blights; its excessive rains and severe droughts; its low, one-story cabins and exiled cellars; its short supplies of vegetables and fruits (we speak of the days of our observation;) its predisposing agues and fevers, as Lind has it, but as Dr. Barnes renders it, epiphenomena that *mask* the true pathology; its depressing influences upon the energies and hopes; its dessolating bilious fever epidemics, and masquerades of epiphenomena, carrying death and despondency into almost every family; all severely and impressively proclaim the fact. Such surrounding influences falling on breeding and nursing mothers, whose laborious duties often covered the daily programme for both mistress and servant, afford the reasons, or the why and wherefore, for the multiplied cases of the nursing sore mouth affection that fell under our care in Illinois, a running history of a few of the most prominent of which, constitutes the burden of this chapter, to which our readers' careful and candid attention is now invited.

Case I.—The first case of the nursing sore mouth affection that fell under our observation and care, and the first time we remember to have heard of this popular name for a disease, was at Springfield, Illinois, June, 1835; the memorable year of scanty vegetable supplies, and lamentable state of the public hygiene before spoken of.

The patient resided in the village, and was suckling her third child, an infant then about eight months old. She had been laboring under the affection three or four months before our advice was solicited, and had been treated without marked or permanent benefit. It was an habitual affair with her; she had had an attack during each of her former periods of lactation, in the State of Massachusetts, from whence the family had emigrated; had weaned her infant on each occasion to save her own life, and both had died of cholera infantum;

and her infant at the breast was laboring under it. Her medical attendants advised, insisted, indeed, on the weaning of the infant as her only chance of recovery, but she pertinaciously refused, and fell under our care.

Our impressions, on first seeing, the case were, that the woman was mercurialized—she seemed to be laboring under a moderately severe ptyalism. Her mouth was sore, sensitive to hot drinks, she could not masticate solid food, and still there were no very distinct ulcers to be seen, but there was a general scalded condition of the mouth with ptyalism and a fœtid breath. She was very anæmic, of almost alabaster paleness—had a diarrhœa that no remedies seemed adequate to control—much pain and tenderness of the abdomen—was very much emaciated—so weak she could but just get up, and occasionally walk about—there was a tendency to fainting and swooning that had excited the greatest alarm, and threatened to prove fatal on several occasions—she was exceedingly desponding, and continually apprehensive of evil. One circumstance alone seemed favorable—her appetite was good.

After a full and careful investigation of her condition, we had no difficulty in diagnosing this nursing sore mouth case to be of a scorbutic character, and the result of treatment abundantly verified our diagnosis. Lemon juice, loaf sugar and water, with brandy and a little morphine, constituted the main medical treatment; and as to diet, we fed her on strawberries and ice cream; bread and milk with strawberries; clabbered milk with sweet cream and sugar; stewed currants; stewed gooseberries; panado made with champaign wine, etc., etc., allowing her as much variety as the scanty vegetable supplies of that spring afforded. All the old potatos had long been exhausted, and new ones had not come in. All the small fruits of the season were freely allowed, and if not fully ripe, were stewed. Custards were also a standing dish, in her dietary. Animal soups, and broths too, with cabbage, carrots, etc., added, and highly flavored with savory herbs, and well seasoned with salt and cayenne pepper, were ordered daily at her dinner meal. Under this generous dietary, *gradually adopted*, the bowels at the same time, restrained with brandy and sugar, and a little morphine, regularly admi

nistered; with daily ablutions and frictions of the skin, and a draught of solution of bicarbonate of soda, about half an hour after every meal, the patient was rapidly restored to health; *and the puny infant also.* In three weeks the mother was restored to a better state of health, than she had enjoyed since the birth of her infant. She nursed her infant through the summer, having a greatly increased flow of milk, and escaped the bilious fever, which was so strongly epidemic that season. The infant, though it recovered from its summer complaint without medication, took the ague in September, and was afflicted with it more or less through the following winter,

Case II.—While in attendance on the foregoing case, we were called some twenty-five miles into the country to attend Mrs. C———, a miller's wife, who had been laboring under an anomalous affection for months, that had completely baffled the skill of her physician. Her case had obstinately resisted treatment since January, soon after her confinement, and had become of the gravest character. Such a state of sero-sanguinous salivation presented as had led the friends to believe the mercurial treatment had caused it, which her physician, however, declared was not the case, for he had not given her a grain of any mercurial preparation whatever. The woman was confined to her bed; was of pale, anæmic, sallow hue; very much emaciated; skin rough and dry; gums parted from the teeth, soft, spongy and bleeding; teeth loose and reclining; appetite good, but mouth in such a condition it was impossible to eat; breath horridly offensive; faintness, vertigo and palpitation on sitting up in bed; pulse very feeble; bowels had been constipated all the winter, but recently diarrhœa had set in with increased prostration; lactation nearly suppressed, and the infant sickly.

Our memorandum shows that three visits were rendered, and that at the end of three weeks the patient was so far restored as to be able to attend to her household affairs. The treatment was a yeast mouth-wash kept constantly brewing in the cabin chimney-corner; milk punch ad libitum, made of sweet milk, lemon juice, loaf sugar and brandy; and a generous dietary. The native gooseberries were large enough to

stew, and we advised their daily use; also, eggs, custards, soups, jellies, etc.; and as convalescence progressed and the mouth became capable of mastication, lettuce, mustard greens with vinegar, veal, venison, etc., until a full and generous dietary of solid food was reached. Daily ablutions and friction over the region of the abdomen were enjoined, together with soda drinks to correct acidity of the stomach from fermentation, and some mild vegetable astringent with a little morphine to check the running off from the bowels. The indications seemed to be fully answered by this course of treatment, for both mother and infant were rapidly restored to health.

Repeated ineffectual attempts to restore sucking infants to health by drugging them in that so called malarious region, the smallest doses of the most approved formulæ being generally rejected by their sensitive stomachs, and the observance of their frequent restoration to health from very unpromising states through the administration of remedies to their sickly mothers, taught us some early and valuable lessons in the treatment of infants.

Now, no one, in the least conversant with scorbutic affections, can, for a moment, doubt that these two cases were cases of land scurvy. The phenomena and the treatment all prove it. They were both the same form of disease unquestionably, and the first case, was the third attack of the "nursing sore mouth" affection, according to the patient's own account, that had occurred in her own person.

The above described cases of land scurvy, then, are such as the graver sort of nursing sore mouth cases present. It may have been fortunate for us that for three or four months we had recognized the scorbutic diathesis as a prominent element in the vernal diseases of that year, so remarkable for the extreme scarcity of vegetable provisions. Indeed we had already treated a number of similar cases in nursing mothers, who had suffered an attack of bilious fever the preceding autumn, and who were thus greatly predisposed to scurvy, according to the general acceptation. The cases reported, then, are types of many that occurred that season under our notice, in debilitated pregnant and nursing women, and all were successfully treated on the antiscorbutic plan. The

spring and summer were excessively rainy, and when the heat of mid-summer set in, under the exciting influence of which the bilious fever epidemic of that year was developed, the consequences were truly awful. Whole families were prostrated in all parts. The dwellers in towns and in the country suffered alike. No immunity seemed to have been acquired by habituation to the climate, for many of the oldest residents fell victims. Neither men, women, nor children escaped, but women were the greatest sufferers. Almost all pregnant women were attacked, and those attacked aborted, or suffered premature delivery. So constantly was this the case that it was a matter of observation with all the physicians, and settled down into an aphorism, that every pregnant woman attacked lost her hopes. Sundry cases were prematurely delivered under our care at seven or eight months. Some infants were still-born, some in a state of asphyxia that with great exertions were recovered, and others having a little stronger hold of life raised a feeble cry. Those that lived barely vegetated for the first few months, maintaining but a feeble hold of life, being pale and sorrowful, subject to ecchymoses, purpura, sore mouth, fœtid diarrhœa or cholera infantum, and convulsions. What has been denominated pernicious fever was very common. Also the continued form of bilious fever was very frequently observed to run into the comatose state, from which few recovered. Now, how much of that grave epidemic was chargeable to scorbutus our readers must judge: the question has never before been mooted.

It is cheering to bear testimony to the great improvement that has taken place since that period, in the treatment of the so-called malarious fevers. The purgative plan of treatment by calomel, was, at that date, the standard practice, and quinine only given in small doses after an intermission, or a very marked remission occurred in the fever. The regulation of the secretions of the liver by broken doses of calomel was, in those days, the alpha and omega in the treatment. Now it is found that a full dose of quinine and morphine, administered in the hot stage, throwing the patient into a profuse sweat, effects more in twenty-four hours than the old method accomplished in three weeks, and no necessity to regulate the

secretions of the liver at all. Tonics, acids, and wholesome nutrition fulfil all the indications, after eliminating the effete matter by the skin.

The reader will doubtless pardon this digression, if digression it be, and any subsequent ones that we may be guilty of; for in our researches into the nature of the nursing sore mouth affection we must travel the road of our observations at the bed-side through the malarious epidemics of Illinois, and present the coincidences of cold winters, droughts, and blights in vegetation, with the epidemic manifestations of the nursing sore mouth malady. The fact of our model cases occurring coincident with blights, in years of dearth, is by no means to be lost sight of; and if we take leave to make a record of some other practical matters as we journey along, we trust our contribution will not be the less readable or less deserving of notice.

The constitution of the seasons of the year 1838, we have spoken of as remarkable—a summer of intense heat and drought following a very cold winter. The crops and fruits of that year were greatly abridged. Winter fevers prevailed and were very fatal. The vernal wave of disease was of typhoid tendency, and unusually severe and fatal. Nursing sore mouth cases were frequent, and other members of those families where the nursing mother was affected, often exhibited similar symptoms—palor, lassitude, inertia, and drivelling sore mouth. In sundry instances we prescribed not only for the nursing mother but for the whole family. The objective signs of developing scorbutus would generally be present in different degrees of manifestation in the members of those families. In some there would be but a crimson line along the dental margin of the gums, while others would exhibit hyperæmia, or commencing sponginess of the gums. Infants and children who had suffered from ague were very prone to take on a chronic feebleness accompanied with a sore drivelling mouth. The bilious fever epidemic of the summer of 1838 was another swelling wave of mortality. It increased in force and fatality with the increase of the heat and drought, and continued to find subjects till late in autumn. The river bottoms were excessively pestilential locations. The cabins

contiguous to the margins of the dried up creeks and rivers were lazar-houses; whereas in the wet season of 1835, the habitations on the bottoms and river banks were the most healthful. One dose of calomel frequently produced salivation; and dry gangrene, or cancrum oris was sometimes an unexpected result. Pernicious fever or congestive chill often terminated fatally within twenty-four hours from the attack, the subjects being considered in good health previously. Continued bilious fever often ran into coma, after the first purgation, and terminated fatally on the third or fourth day. New-comers to the country suffered beyond measure; in some instances every member of such families died!

The spring wave of disease the next year was so palpably characterized by the objective signs and symptoms of scorbutus, that it may be said the scorbutic diathesis complicated all forms of disease. The winter of 1838—39, was mild and open, and the summer of 1839 pleasant and salubrious; and the crops uncommonly good; consequently the season was a healthy one. An early check was given to the unusual manifestation of scorbutus by an abundance, for that country, of early fruits, greens, and garden vegetables. The nursing sore mouth cases, however, of that spring were very common. The affection occasionally occurred in male subjects. All the cases we attended were speedily cured by a similar course of treatment to that which we have before given, but sundry cases of which we were cognizant, treated by other physicians proved fatal. One was a neighbor of ours and a male subject: we will report it.

Case III.—Mr. B———, aged about 45, of slender make and sallow hue, was under treatment some two months in the spring of 1839, for the *liver complaint*, as his physician termed it. How much scorbutus is annually treated as disease of the liver we will not stop to inquire. He complained of lassitude, difficulty of breathing, and sense of oppression. He had great indisposition to exertion, and grew weaker as warm, spring weather opened. He had constipation of the bowels; panting and palpitation after the least exercise; fetor of breath and continual soreness of the mouth. He had regularly complained of these symptoms every spring, for seve-

ral years, and was as regularly relieved of his ailments every autumn, having a fruitful peach-orchard at hand. His wife had died of the same complaint while nursing an infant in the memorable spring of 1835. He walked out one day into the brush-thicket near his house to exonerate his bowels, being under the operation of small doses of calomel and rhubarb, and returning to bed, laid down and died suddenly, conformably to the scorbutic law.

We may set it down as a fact, that not a spring passed but that, sundry well marked cases of scorbutic nursing sore mouth presented, but that after cold winters, droughts, and blights, the disease would become very prevalent, almost epidemic; and the summer wave of bilious fever would also become correspondingly grave. So the inhabitants of Illinois, at the period of which we speak, were continually 'between hawk and buzzard,' or scorbutus and malarious fever, speaking after the general acceptation and considering them *two;* they acted and reacted on each other; the subjects of one were the victims of the other; and mothers and infants were the delight of both.

Case IV.—In April, 1842, while on business in the military tract, we were desired by two medical gentlemen to see with them a case of disease that had baffled their best endeavors for months. We found the subject a nursing mother, very low and anæmic, with ulcerated mouth and petechiæ on the skin—there were vibices on the back as large as a half-dime, filled with bloody serum. The patient had been wholly confined to her bed for several weeks. Prostration, diarrhœa, despondency, great general distress, fainting fits, palpitation, fetor of breath, and cadaveric odor characterized the case. At our suggestion the patient was put under antiscorbutic treatment and regimen, and the course proved effectual: the lady was restored to health.

The winter of 1842—43, was a severe and long one. The spring of '43 was greatly retarded. It seemed as if winter only retired when conquered by solstitial June. The ground could not be prepared for croping in due season, and all the early fruits and vegetables were poor and stunted, and the crops of that season greatly abridged.

The vernal diseases of that year were characterized by ty-

phoid tendencies. The nursing sore mouth was common, and men, women and children were drooping and drivelling under it. Winter fever was epidemic, that is, continued bilious fever occurring after the remarkable thaws of winter, followed suddenly by intense cold. After a few days treatment on the old mercurial or purgative plan, many of these cases would pass into delirium and coma, and terminate fatally. Typhoid pneumonia became prevalent under the spring vicissitudes. The congestive form of ague, or pernicious fever followed; and also characterized the summer epidemic of that year. Scarlet fever prevailed that spring, and was very malignant. As warm weather finally came on in May, sudden deaths occurred in the corn-fields. Several farmers in the settlements round about died thus, while at their spring work; after the manner of sun-stroke; but only really explained by the law of sudden death from shock seen in scorbutus. This is our explanation *now* of the matter, and of other phenomena that were so strange and mysterious to us then.

True we had advanced a little at that date by the knowledge that scorbutus was an element in the causation, or aggravation at least, of diseases. We were prone, however, to localize it; to confine it to certain families; nursing women and drivelling children more especially. We recognized the nursing sore mouth affection as a form of scurvy, nothing less or more; and we diagnosed it in its complications by the physical signs; but we had not the same idea then of its pervading influence as an element in the causation of the epidemics of Illinois, that we have since become satisfied it exercises. We had advanced a little too in therapeutics; had found that quinine and morphine were highly admissible in the hot stage of fever, but we had no rational idea of the therapeutic effects. We only knew the fact from repeated trials that one full dose of quinine given in the hot stage combined with morphine did more good than a dozen small doses given in the intermission. *Now* this problem is plain: given in the hot stage the dose hurries the patient at once into the sweating stage, and drenches off by the skin a ten-fold quantity of the effete detritus, that the efforts of nature were inadequate by repeated trials to effect. The fever is thus broken—the pulse returns

to its normal standard—the way is clear for nutrition, and the appetite ravenous. Support digestion with tonics and anti-scorbutic food and the patient will have no relapse, but without these precautions the nutritive function will again become clogged, and nature will resort to her method of trying to throw off the effete matter by sweat—a habit acquired by night refrigeration and day insolation and sweating. According to the quantity of effete matter thrown off, may be the state or duration of apyrexia, for ought we know, explaining the reason of a quartan, a tertian, and a quotidian—also of relapses. We have never seen a *rationale*, and offer this explanation for what it may be worth. It looks reasonable.

In the autumn of 1843, we changed our residence from the Sangamon region to the city of Chicago. The winter of 1843-44 was characterized by remarkable vicissitudes of weather—extreme frosts and sudden thaws. The spring and early summer of 1844, were exceedingly wet, so as greatly to embarrass planting and growing vegetables. not only in the Lake Michigan region, but throughout the State, so that the crops of that year, may be set down as decidely short. The extraordinary flood of that year, in the Mississippi and its tributaries, is a matter of history.

The following winter, again, was variable and unpleasant; and the spring and summer of 1845, again, characterized by excessive rains and high waters, to the great annoyance of the farmers in the flat, prairie country, so that the crops were likewise abbreviated that year. The following winter, that of 1845-46, was very cold, and the rains and floods of May and June, '46, again seriously interfered with the planting and growing of summer vegetables, and the summer and autumn were characterized by excessive heat and drought, which abridged the crops materially. The following year, 1847, was remarkable for the scarcity and the high prices of provisions. These disastrous years were noted for the potato blight, and general sickness in the United States, and the Irish famine. and its climax of consequences, scurvy, typhus, and finally cholera, in Europe.

The cases of nursing sore mouth, were so common in the springs and summers of all these years, that it may be said to have been epidemic. We frequently met with a nursing

mother, her infant, and two or three of her other children laboring under it in different degrees of severity, and in some instances whole families were affected. A few in the first walks of life died. We were called to prescribe for a family living out some two or three miles from the city, on the flat, wet prairie, in the spring of '44, all of whom, three men and two women, mother and daughter, were nearly prostrated with it. Neither of the women was a nursing mother, but they both had the constitutional and local evidences of the malady, in a marked degree. The grown daughter's mouth, exhibited several large, spongy ulcers, one of which was on the vellum-palati, and came near destroying it. She had also, ulcerations of the os tincæ and vagina, lencorrhœa, and falling of the womb, the almost constant symptoms of this constitutional malady in women.

The constitutional symptoms were manifested with greatest severity in the old man, who was confined to his bed. The family imagined themselves poisoned, from eating damaged flour; but the cause of the calamity was a more general one—the stinted vegetable products of their little wet farm, had all been sent to the city in the fall, commanding high and tempting prices, and the family had lived all the winter on pork and beans, and bread and coffee. A generous anti-scorbutic course of treatment, see case No. 1, with but little recourse to medicine, restored this family to health.

In our interchanges of views and professional courtesies, we occasionally saw cases of this very common affection, in the practice of other physicians, and our suggestions of its scorbutic nature being acted on by the adoption of anti-scorbutic treatment, the cases uniformly responded and rapidly recovered.

A few types or model cases that occurred in our pratice, during the disastrous blighting years of which we have spoken, deserve a more detailed report.

Case V.—In June, 1844, we attended an inveterate case of this disease in the person of an Irish woman, broken down by rapid breeding and poor living. She was nursing twins, three months old, doing her housework, and taking care of three other children, just out of her arms, at the time she

collapsed. She had been gradually getting under the constitutional and local symptoms of the disease, since her confinement in March; and when we were summoned to attend her, the mouth was swollen with ulceration, and she had serous diarrhœa, the discharges resembling the rice-water discharges of Asiatic Cholera, even to the *floating floculi*. We took notice of this character of the discharges for nearly a week, more or less, when, from treatment, the diarrhœa ceased, and the woman began to recover. She got on so well under the tonic and lemon punch treatment, with a generous diet, that at the end of a month we had ceased to look after her.

About six weeks from the time we were first called to the case, a summons came for us to attend her in great haste. We found her vomiting and purging rice-water fluids, and in every sense of the word, laboring under an attack of Asiatic Cholera. A sporadic case. The summer heat was intense; her confined unventilated shanty, was reeking with filthy odors; she had imprudently eaten heartily of boiled cabbage for dinner, and cholera was then threatening her with speedy collapse. We, however, arrested the progress of the disease, by means of a salt-water emetic, followed by opiates, and had the happiness of seeing her recover. She contiuned feeble, however, till fall.

In October, she was attacked with bilious fever, and was attended by another physician. We were, however, summoned to her bedside, a day or two before she died, and found her dying of dry gangrene of the mouth, from the use of mercury!

Case VI.—March, 1845, attended Mrs. J———, in labor. She had been feeble all the winter. Found a midwife in attendance, who had desired that a physician might be called, because of the delicate state of the health of the patient. The labor was natural—no hemorrhage followed—but the patient began to sink before she was bandaged and changed—said she was dying—complained of universal numbness of feeling—we grasped the womb—compressed the abdominal arota, in our anxiety to do something effectual; but, inasmuch as there was no hemorrhage we desisted—she writhed, and moaned, and sighed, and gasped, as life waned—stimulants, fresh air, rubbing, ether, aspersion, were hurriedly made use of in our endeavors to restore her, but all to no purpose, she died.

In Collin's Midwifery, will be found a number of similar cases, where death occurred after natural labors, and the cause wholly inexplicable. We hold that the cause of death in such cases is the scorbutic diathesis. Similar cases have undoubtedly fallen under the observation of most obstetricians. Sudden death after the shock of parturition, the reader will remember, occurred in Dr. McGugin's case of nursing sore mouth; also, in Dr. Marshall Hall's cases of a serious affection.

Case VII.—In March, 1845, we were summoned to attend Mrs. G———, whom we found in a very delicate state of health, and daily expecting her confinement. She had been an invalid all the winter, and had been treated the whilst homœopathically. She was able to sit up a part of the time, and even to walk about the house. She was very much emaciated; of pale, icteric appearance; mouth sore, and drivelling, with a dark, dirty ulcer on the left side of the tongue as large as a Lima bean, having a crimson, bleeding margin, and a dark, ill-conditioned centre. The ankles were œdematous, and her legs bespattered with petechiæ. We prescribed and gave directions as to diet, and retired. Early the next morning, before we had risen, a call came to attend her in labor. She had an easy accouchment; there was no hemorrhage; the infant was small and feeble; the putting to bed, was attended with as little exertion on the part of the patient, as possible; cordials and nourishment were ordered and we retired. Within an hour we were summoned to return in great haste, when we found her dying. She was in the full possession of her reason, and able to speak, and conscious that she was dying. The phenomena were sinking, moaning, catching for breath, numbness of feeling, writhing to and fro, gasping, and death. She must have been half an hour nearly, in her agony, and no restoratives of fresh air, hartshorne, brandy, rubbing, etc., were of any use. We grasped the abdomen over the region of the uterus, and found the womb in a state of tonic contraction—there had been no hemorrhage. We regret that we lost sight of the fate of the infant. It was probably reared by aid of a wet nurse, as the family was in affluent circumstances. Our opinion, as to the nature of the affection of which this

lady died, viz: nursing sore mouth or land scurvy, was freely expressed to the friends, and anti-scorbutic diet commended to the family.

Case VIII.—April, 1846, summoned in great haste to attend Mrs. L——. She had aborted with dispatch after a walk, hardly reaching home soon enough. We found the ovum expelled entire. There was not much hemorrhage, but she was greatly alarmed, and soon commenced sinking, sighing, and gasping for fresh air, and taking on fatal airs, after the manner of the two cases of death after delivery above detailed. The paroxysm was not like syncope from loss of blood, for there was perfect consciousness. Prostration, with universal distress, manifested by turning, twisting, panting, moaning, and complaining of a sense of numbness or universal loss of feeling, constituted the phenomena. Fresh air, fanning, aspersion, ether, rubbing, hot brandy toddy, diligently and perseveringly used, finally restored her to quietude.

On examining this patient's mouth with reference to the suspected cause of the sinking fit, the objective signs of the scorbutic diathesis were manifest in the crimson line along the dental margin of the gums; hyperaemia of the arches of the palate; pale tongue, etc. Her countenance, too, was pale, and there was fetor of breath with constipated bowels.

The husband and a child three years old were also laboring under the scorbutic diathesis. They had the objective signs in the mouth; the husband had sallow countenance, bleeding piles, and great constipation; and the infant fœtid diarrhœa, sore mouth, and tumefied gums.

The proper antiscorbutic remedies and diet soon restored them all to health.

Case IX.—We were consulted in April, 1846, by a shoemaker, complaining of abdominal pains with general indisposition. A mild cathartic was ordered him. He returned the next day with his symptoms much aggravated, and a sore mouth superadded. On a more careful examination the scorbutic sore mouth of nursing women was very evidently the difficulty. Besides soreness of the tongue and buccal surfaces, the gums palpably revealed a scorbutic condition by the red line along the teeth, and commencing tumefaction. His con-

stitutional symptoms were, lassitude and sense of weakness with abdominal distress. After about two hours work in the morning he had to give up and lounge the balance of the day. His appetite was good, and he thought it strange that he should feel so feeble. Was very regular in his habits even to teetotalism, and could assign no cause for his "bellyache" as he called it.

On questioning him as to his dietary, it appeared that he had eaten no potatos, turnips, cabbages, onions, or pickles for nearly three months. Pork and beans, homminy, and bread and coffee constituted his bill of fare. We asked him what he would like to eat, what he craved? He replied, "a raw turnip." He was dismissed without further drugging and advised to eat as many raw turnips as he wished, and to live chiefly on vegetables. In a few days he called again to say how well he felt, greatly to the surprise of some of his croaking cronies who told him his doctor's advice would be the death of him.

Case X.—A visit of courtesy in the family of a friend, whose wife had for a long time labored under a grave attack of nursing sore mouth,—visit timed adroitly, yet so as to seem accidental,—afforded us an interview at the bed-side, as we desired, with her physicians, with whom we were on terms of friendly intimacy.

The patient had been blistered over the abdomen for the pains and tenderness; her cravings for acids, pickles, and sour fruits had been denied; the mouth was in a sore drivelling condition, resembling mercurial salivation; despair and distress clouded her palid and sunken countenance; she was unable to rise from her bed; and altogether the case was very unpromising. At our suggestion that the affection was of a scorbutic character, the case was thenceforth treated with lemons, oranges, and vegetable nutrition, and the lady rapidly recovered.

Collateral evidence of the prevalence of the scorbutic diathesis, as an overlooked element in the diseases of the pestilential years under consideration, is afforded by the aggravated character of the epidemics that afflict children. To be more explicit, the scarlet fever was epidemic in the springs of 1844, 1845, and 1846, in Chicago, and proved very intractable.

In some instances nearly every child of the families invaded died. As many as three or four children in the same family died of it in several instances. It remitted in autumn, and reappeared in aggravated form every spring. The most malignant cases of the anginose scarlatina presented, that we ever remember to have seen. The whole mouth and fauces would often present a foul, sanious, phagedenic, ulcerated condition, of putrid character and offensive odor. Why this tendency to a dissolving state of the tissues of the mouth, unless from complication of the disease with scorbutus? It is stated by Dr. M. B. Wright, in an article on the scurvy as it appeared in the Ohio Penitentiary in the memorable spring of 1835, that one of the patients spit up his palate! we shall refer to this paper again. Coincident with the spring waves of scarlatina, we have taken note of the epidemic vernal manifestations of the nursing sore mouth affection. Dr. Miner, it will be remembered, speaks of its epidemic appearance, and Dr. Marshall Hall observed the same affection in males. Sundry instances came under our notice in the spring of 1846 where not only the nursing mother had this sore mouth, but several of the children of those families also. We remember one family where *four of the little children* had drivelling sore mouth coincident with the mother's attack, together with constitutional symptoms. Now, what would have been the probable consequences had scarlatina impigned on that household? The summer complaints of infants, or the epidemics of cholera infantum, were particularly severe and unmanageable also, during those years; and as in 1835, and 1838, we noticed that infants at the breasts of those mothers who had nursing sore mouth often had it. Why this, unless dependant on the mothers' scorbutic taint? Now and then a case of Asiatic cholera occurred.

The summer epidemic bilious fever in the hot, dry summer of 1846, was, again, of most remarkably aggravated character, in Northern Illinois. It was a repetition of the epidemic of 1835, in the central regions of the State. Pernicious fever was common, especially among laborers on the Illinois and Michigan canal, where insolation by day was withering; upward radiation or cooling by night in open shanties without

floors, sudden and excessive; and where the dietary for the six months previously had been little else than bacon, bread and coffee. We took note also of the greater frequency of attacks as well as graver character of the types of fever among the foreign population, and the poor, living back from the lake and along both branches of the Chicago River; and comparative immunity of the dwellers on the lake shore, who were better fed and better housed, and where the expanse of water tended to equalize the temperature of day and night, and where also the sleeping apartments are in second and third stories; corroborating the view that extreme impressions of the vital stimuli develop these fevers, rather than a hypothetical malaria.

There was the same tendency, also, in the fevers of this year, to assume the comatose condition and end quickly in death, that characterized the epidemics of some previous years, especially those cases in which depletory treatment was resorted to. In some few instances patients were recovered from the comatose condition by heroic doses of quinine, where the patients were not past swallowing; and where this course failed we saw its power and salutary influence in producing a partial return to consciousness occasionally manifested. The objective signs of the scorbutic diathesis were observed in these cases, and is it not rational to infer that a scorbutic ramollissement of the brain is the true cause of the coma, and that in the cases which do not respond to a free administration of quinine, there is hemorrhage or extravasation, either serous or sanguineous, agreeably to the scorbutic law? We doubt not the softened condition of the gums has been noticed in malarious fevers by many physicians who have never thought of attributing it to scorbutus. Doubtless many have marvelled, too, that the smallest exhibitions of mercurials should frequently produce salivation. Now, according to our experience, these cases, where there is no tolerance of mercury; where whole families sicken of malarious fever, and it assumes an aggravated character; and where, though it be interrupted, relapses are very common, indicate scorbutus. We found the citrate of iron and quinine more effectual in preventing relapses than any remedy we had ever prescribed, especially when

aided by lemonade drinks and antiscorbutic diet, or plenty of good food and acids.

Case XI.—A case of nursing sore mouth came into our hands in the spring of 1847 that was very instructive. The lady afflicted was from the city of New York; had labored under the affection nearly the whole winter, and had been advised by her physician to travel. She visited Chicago in May, and remained through the month of June with her sister. Every effort to conquer the disease had been unavailing; she had been dieted and drugged to no purpose; and was, indeed, a pitiable victim of medical ignorance. We do not remember who had been her physician, nor would we speak it if we did, although there is nothing reprehensible in not understanding how to cure nursing sore mouth cases with dispatch, but there is in not knowing the pernicious influence of a one kind of diet long persisted in. This patient had been dieted by her physician, so she said, all the winter and spring, on oyster-soup, soda biscuit and tea; and I have no reason to doubt the truth of her statement. The truth is, the state of her mouth would not allow of her eating solid food, and there is a popular, if not a professional prejudice against allowing suckling women all manner of vegetables and fruits, because, it is held, they produce distressing if not dangerous colics in their infants. Now this restriction in the diet of pregnant and nursing women is, undoubtedly a frequent cause of the setting in of the nursing sore mouth affection, or the scorbutic diathesis.

Dr. Wood, says, (*Practice of Medicine, vol.* 2. *p.* 252). "Even the regimen of the sick, in ordinary private practice, should be regulated by the physician with some regard to scurvy, which, within the experience of the author, has appeared to result, in one instance at least, from a restricted diet, too long continued, under medical direction." He says, (*op, cit. p.* 256), "Meat, whether fresh or salt, cannot be the cause of the disease; [scurvy] for it is sometimes produced when little or no meat is furnished, as among the people of India, when confined in hospitals and prisons, and fed upon rice and other farinaceous products. The author has witnessed a case of the disease in a young lady, who was confined for a

long time, for the cure of an obstinate diarrhœa, to a diet exclusively of barley."

This case of obstinate nursing sore mouth that had been so long under an improper course of diet, responded immediately to a generous use of lemons, oranges and other fruits, with a variety and abundance of nutrition.

Several cases of sudden death occurred during those years, in no way susceptible of explanation but by the scorbutic law. A distinguished prelate, the late Bishop Quarter, died in the spring of 1848, suddenly, just after the rigid fast of lent, without sickness, or more than lassitude, weariness, inertia, etc., of which he had complained for weeks. He died suddenly at night, before medical aid could be summoned, and the best account we could get of the matter from those in attendance was, that, when attracted to his sleeping apartment by his moanings and last agonies, it appeared that for some cause he had risen from his bed. His pains were greatly referred to the abdomen, but he was soon past utterance.

Our explanation is that, a return to a full diet immediately after lent, produced derangement of the stomach and bowels, and the shock proved fatal, conformably to the scorbutic law. Observing his sallow and jaded look some days before, we sent him a jar of extra-nice, mixed pickles; but he observed subsequently on thanking us for the attention, that he never ate pickles at all, under any circumstances!

We visited the mining regions of Illinois, Wisconsin, and Iowa, in the spring of 1848, and met with sundry cases of the nursing sore mouth in our travels. One case that fell under our notice was the wife of a physician, and, the case, though inveterate, responded directly to antiscorbutic treatment. A clever physician of Iowa informed us that it was a common affection in his locality—Davenport—and that he had found the *chlorate of potash* an effectual remedy. The efficacy of the potash salts has been spoken of before.

The winter of 1848 '49, was one of extraordinary inclemency. It set in with deep snows in November, and continued till late in March; and the terrible disasters and destruction of property by the spring floods throughout northern Illinois, were too remarkable to be soon erased from memory. The

destruction of property in the Chicago harbor was very great. The Des Plaines River o'erspread its banks, and discharged its flood of waters across the summit level prairie and through the canal into the south fork of the Chicago River, carrying before it the great burden of solid ice, eighteen inches thick at least, that had formed on the ponds of the prairie during the winter. The bridges over the Chicago river were broken loose from their moorings by it, and together with the shipping—sailing vessels, steamboats, and canal boats—hurried out into the Lake, or crushed, sunk, and gorged, pell mell, in the bend of the river just above the piers.

During the spring of 1849 frequent cases of the nursing sore mouth affection came under our observation, and all forms of disease were again dreadfully aggravated by the scorbutic diathesis.

Case XII.—A physisian's wife, a near neighbor and friend, fell a victim to this "serious affection," I think in the month of April of that spring. Our families were intimate, unceremoniously so, and living but a few doors apart, we saw this estimable lady often through the winter and spring. She was naturally rather a delicate, feeble woman, and being enciente through that long, cold winter, and necessarily shut up and confined within doors, her health and digestion suffered seriously. She had the heart-burn almost constantly, and we remember to have heard her say that a raw turnip scraped was the only thing that would relieve it, and this they prohibited. She had much palpitation of the heart, and great and increasing constitutional feebleness, and her confinement was awaited with much anxiety. She became very anæmic and nearly helpless at her full time; had a hard labor; did not get up or progress towards health at all after her delivery; in fine, had the constitutional symptoms of the nursing sore mouth developed in an inveterate degree; and one morning, after the exertion of changing and having her bed made, she fainted in her chair, and died. We were at her bed-side almost immediately, before she ceased to breath; and kept up artificial respiration some minutes, but all to no purpose, the sudden law of collapse incident to scorbutus had been irrevocably executed—she was dead.

This case occurred in a wealthy family, and explains how it is that the nursing sore mouth or scorbutic diathesis is often developed in the wives and mothers of families able to bring to their daily board every luxury the season affords, but who from mistaken notions of prudence engender scurvy by a restricted diet. Thousands of breeding women in the upper ranks of life are destroyed in this way. Extremes thus approach; while the poor are unable to obtain proper food, the wealthy often restrict themselves to bread and tea, or a farinacious, innutritious diet to cure their dyspeptics brought on by inaction or sendentary habits, forsaking pot-luck dinners, and cabbage swimming in vinegar; and so both rich and poor fall victims to scorbutus. Women pregnant for the first time, we have often seen victimized by Graham rules of restricted diet. Be careful in your diet is the kind watch-word of a mother, who knows nothing of the laws of physiology, and which really means, abstain from pickles, vegetables, fruits and preserves; when, if ever there is a time these articles of diet are especially demanded, it is at the time when nature requires a double supply of all the wholesome elements of nutrition—the period of utero gestation.

About the first of June 1849, the Asiatic cholera broke out in Chicago, in a population where all, or at least whole families were laboring under the scorbutic diathesis, as we have shown. It made its ingress by the way of the Illinois and Michigan canal, speaking of it as a traveling death angel, and coming up from St. Louis and New Orleans. It had appeared faintly in New York the previous autumn, that is, a few cases had occurred in the locality called the "five points," among European emigrants from quarantine. A ship had just arrived from Europe in which the cholera had broken out at sea, this ship, however, not having sailed from a port where it was raging though it was epidemic in other cities. It ran through the quarantine hospital at New York, but lay hushed in the city until spring. It had appeared at New Orleans also under very similar circumstances in December previously, having broken out at sea in an emigrant ship, and it spread in New Orleans, or manifested considerable activity among sailors and immigrants. It became strongly epidemic early

in the spring, and coquetted all the winter and spring with St. Louis, where it established itself as warm weather came on, and raged with frightful mortality in June and July, showing great partiality for the immigrant population, largely congregated there, and the poorer classes of foreigners. It was not slow in progressing up the Illinois River, attacking the most important towns successively. At Peru, under the bluffs, at the head of navigation and junction of the canal. it caused a terrible panic, proving very fatal at its onset, and causing everybody to fly. Of some five thousand inhabitants not one remained, it is said. At Chicago it proved very mortal, sweeping off nearly every member of some families, particularly those first attacked. It passed on eastwardly, via the lakes, raging with great severity and fearful mortality in certain localities, particularly at Sandusky City, in Ohio, a good scorbutic locality, or a cold, damp, fishy place. The Ohio River was also a channel of its travels, and Louisville, Cincinnati, and other cities, were also theatres of its ravages during the same time that it raged at St. Louis and Chicago.

Case XIII.—It so happened that the first case of cholera which fell under our care, occurred in a suckling mother—a nursing sore mouth subject. Like all the first cases of that epidemic it proved fatal in a hurry; and most remarkable to say, there was neither vomiting nor purging! It was one of those very malignant cases which always characterize the opening phenomena of a grave epidemic. The corpse was "black and blue" immediately. The rapidity of the case, and the evidence of putridity caused us no little anxiety on account of the other members of the family; but strange to say, neither the husband nor children were attacked. It was an American family in good circumstances; and whilst whole families in the lower walks of life, and particularly among the foreign population, were being cut off in the first outbreak, the balance of this family escaped attack. We say this was a nursing sore mouth case; although we had not been called to prescribe for it as such. The infant was about five months old: we presided at its birth in December previously, and the lady had a good getting up. We regarded her as a person of good constitution, though enfeebled by rapid breed-

ing. She had suckled her infant through the long, cold winter, and was much prostrated by the approach of warm weather, although she had not sought medical advice. Her symptoms, were not vomiting and purging, when she did consider herself sick enough to need advice, but sinking, prostration, trembling, palpitation, difficulty of breathing or inability to get a sufficiency of fresh air. There was palor of countenance; a dejected look; a sunken eye, and a dark cresent under it; sense of oppression, and frequent sighing. She had suffered a sudden aggravation, or a paroxysm of her ailments that had totally unnerved her that morning, and the reports of the cholera had doubtless aided in the matter.

We treated this case very badly. Without reflection, or any philosophic sense, or sound pathological reasoning, we opened a vein and bled the patient about six or eight ounces. She sank and died in four hours at farthest. We were with her most of the time. She threw up once, that is, some medicinal draught was ejected, which was all the vomiting that occurred, and there was no purging, and there had been none, so the patient said. The vomiting was characteristic of true cholera—full, forcible, and finished.

Thousands of cases are treated just as empirically. The malignancy and rapid tendency to death, is ascribed to the "epidemic influence." Whatever is to be done must be done quickly, in order to counteract, or prove antidotal to the poisoning influence supposed to exist in the air. We labored, at that time, under this delusion, and so all-powerful was its influence, that nosology governed us wholly. A little blood early drawn, has been a favorite mode of treating diseases tending rapidly to putridity—even typhus fever. We treated many cases of cholera so in 1832, when ward physician in Baltimore, and supposed it the right method. Some got well after it, any how; but this case went like the dew. It was a most malignant case of cholera, where the powers of life were too much paralysed by the poison, for the usual phenomena to be developed. So we reasoned then. We did not even think of scorbutus, in that case. The idea of CHOLERA eclipsed everything. Subsequently, however, we judged this a case of cholera complicated with scorbutus, or the nursing

sore mouth affection. The dying phenomena were similar to those manifested in the sudden deaths after delivery—jactilation, moaning, sighing, gasping, and numbness of feeling, with clearness of intellect. It was impossible for us, on mature reflection, not to see the evidences of the scorbutic diathesis in this, and many other similar cases, that came under our notice, during that epidemic. The complication, in numerous instances, was too manifest to be gainsayed, and the idea early exercised an influence on our prescriptions. Still, we considered the complications accidental; or in other words, we saw that the scorbutic diathesis was an aggravating element of the choleric disease, as well as bilious fever; and it influenced our practice; led to a free use of punch and quinine, soda powders, etc.

Case XIV.—Mrs. J——— was delivered of her second child under our care, in June, 1849. She had a quick and easy confinement, without accident. After being changed and put to bed, and as we were about to leave the house, she commenced sinking, and sighing, and gasping for fresh air—complained of numbness or general paralysis of feeling—universal distress, moaning, jactitation, etc., and declared she was dying. The windows were thrown open, and stimulants internally and externally liberally administered—rubbing, sprinkling with cold water to cause deep inspirations—everything, indeed, of a restorative nature was rapidly and perseveringly resorted to, and at the end of some twenty minutes or more, she began to improve, and slowly became composed and comfortable.

On inspecting this lady's mouth, the gums displayed the crimson line along the dental margin; the buccal surfaces were marbled with eschymosed patches, and the tongue was sore. On strict inquiry we found that she had had slight diarrhœa for two days, attended with no pain, but which was manifestly the incipient stage of cholera.

We put her under lemon punch, morphine, and quinine, and a thorough anti-scorbutic regimen, and she had a good getting up. It was evident to us, that here was a complication of scurvy with cholerine, or in other words, that cholera was setting in on a nursing sore mouth case. We enjoined an

anti-scorbutic course of diet, and the patient steered clear of cholera the balance of the summer.

Case XV.—On the evening of the same day of our attend ance on the last reported case, we were summoned in the greatest possible haste to an Irish woman in labor, who had the cholera. We found her vomiting, purging, and flooding! Of course she was on the downward road with dispatch. We made a footling case of it in no time, and gave an emetic of common salt dissolved in plain water. The after-birth came with the child, and the child was still-born; not from pressure of the cord, for there was no detention of the head. We grasped the womb through the parieties of the abdomen—bandaged and put the wilted woman whom we had little expectation of saving, into a clean bed. The emetic had been doing its work—the stomach was now quiet—the uterine hemorrhage had ceased—we gave her an ounce of the following mixture, which we carried generally during the epidemic, for an emergency: R. Tr. Rhei. C., Tr. Catechu., Muc. Acaciæ. Syr. Simpl. ā. ā. ʒj., Carb. Sod., Carb. Amoniæ. ā. ā. ℈j. Morphiæ Acetat. gr., j. M., administered in a little sweetened water, and repeated it as often as there was either vomiting or purging. Vomiting did not recur, and the purging was controlled by a few doses of the medicine. On our visit next day, she was out of danger and quite comfortable.

We had attended this woman in 1847, for an inveterate attack of the nursing sore mouth affection, and the infant, then at the breast, was sick all that summer with diarrhœa and teething. The family came over in the sickly summer of 1846.

On inspecting this patient's mouth, the evidences of the scorbutic diathesis were abundant, and she was treated anti-scorbutically thenceforward, and had a good getting up.

Case XVI.—In July, 1849, we were hailed in passing, and desired to afford assistance to a woman supposed to be dying. We found her agonizing and writhing under such a tumult of general and indiscribable suffering, with sinking, and catching, moaning, turning, and gasping, that we find it difficult to draw a picture of her death-struggling tortures. She was at her full time in utero-gestation, but her agony bore

no similitude to the throes of parturition. She had been prescribed for the day before, and had taken a small dose of castor oil, which operated severely, and continued in the manner of a serous diarrhœa. Laudanum and brandy toddy were given freely, and not much diluted: chloroform held to her nose; and fanning and aspersion made use of. She gradually recovered from her attack, under a steady application of restoratives.

Three days after, she was delivered under our care; had a hard labor; we used chloroform with caution, every means to alleviate suffering, and enable her to pass through the ordeal; but she seemed to have no capability of endurance; and soon after delivery, began to sink and take on the collapsing phenomena that we had seen prove fatal on several like occasions. We were well prepared for the event, so far as stimulants and restoratives could be of use, and by lowering the head, fanning, strong brandy toddy, smelling salts, etc., etc., diligently made use of, she finally passed through the attack.

The objective signs of the scorbutic diathesis were very evident in this delicate woman's mouth, particularly the red line along the dental margin of the gums. She had deprived herself of all succulent vegetable food and sallads, for two months and more, to guard against the cholera; had the strongest desire for acids; and had twice, but barely escaped the law of sudden death, from shock known in scorbutus, to wit: after a purge, and after delivery. We looked upon her diarrhœa, at first, as cholerine, and regarded the case as complicated.

The most liberal use of vegetables, lemons, porter, etc., restored her to health and comfort, and satisfied us of the correctness of our diagnosis.

Case XVII.—We have incidentally spoken of ulcerations of the womb and vagina in the nursing sore mouth affection, and have signified that the scorbutic diathesis is frequently the inheritance of infancy, the cause of chlorosis and tuberculosis at puberty, and of nursing sore mouth in mothers during lactation—the cause of the leucophlegmatic constitution with its attendant evils, ulceration of the womb, leucorrhœa, etc., etc. We could report many of these sort of cases, and some

where the local uterine and vaginal difficulties were so prominent as to appear to be the cause of the constitutional infirmities. Much observation, however, in the treatment of this class of cases on the most heroic antiscorbutic plan, has satisfied us that all these vaginal and uterine lesions, of which so much has been written and said of late years, and in the treatment of which the profession has been so shocked with the universal speculum practice, are but the offspring of the scorbutic diathesis; the local lesions being dependant on the constitutional difficulty, the same as in the nursing sore mouth affection. They require to be treated on the same heroic, antiscorbutic plan. The local lesions will disappear when the general health is established; yet we approve of local treatment.

Mrs. S.——, a widow, came under our care in the spring of 1850, a victim of protracted scorbutic dilapidation, with ulceration of the mouth, tongue, intestines, vagina and os uteri. We had attended her in an attack of the nursing sore mouth affection in 1845, after which the family moved into the country, where she was left a widow, and returned early in the spring of 1850 to reside with her sister. We treated her with the most concentrated nutrients, tonics, wine, cod-liver oil, etc., with applications of nitrate of silver to the local lesions, and although the case responded with but a snail's pace, still there was some improvement; the local lesions, all except the uterine ulcer were healed, and the general vigor of the patient considerably improved. However, on the breaking out of cholera when hot weather came, we were suddenly relieved of our attendance on this case. She was one of the earliest victims of cholera, and died in three hours from the attack!

Not to weary our readers, these are types of a goodly number of cases that occurred during the epidemic visitations of cholera in '49 and '50, under our care that showed the disease to be complicated, as we then supposed, with scorbutus. We saw it aggravated by it, as we had seen the bilious fever epidemics, and other forms of disease, and the mixed, inter current, nursing sore mouth-cholera cases, made a lasting impression upon us. We noticed the good effect of anti-

scorbutic remedies in numerous instances, and also the great value of quinine and morphine. Soda powders in ice water were held in high estimation, and small vials of fountain soda water kept cold with ice were much used in treating cholera infantum. We noticed that cholera delighted in the localities held to be the strong holds of malaria, and with but confused notions, we confess, at best, in etiology, we reasoned from the facts before us, that brandy-punch, quinine and morphine were the true means of preventing an attack. In this we were not disappointed. In families where we saw the evidences of scurvy, as in the nursing sore mouth cases; in some patients bedrid for years; in certain immigrants from Europe, Irish, Dutch and Norwegian; and some returned volunteers from Mexico,—where we saw individuals dropping with cholera in whom we noticed the objective signs of scurvy, we put those families under prophylactic treatment, and saw them all benefitted, and generally escaping attack. Those cases that proved fatal without vomiting and purging, made a deep impression, and we were forced to call in the aid of the scorbutic law of sudden death, to explain them. Other practitioners observed such cases also, so we have heard them say, but no rational explanation has ever been offered before that we are aware of. Under the view taken by us that the scorbutic diathesis was present, nothing is easier to understand—the law of sudden death even from the emotional shock of fear, is sufficient to prove fatal, without any exhausting drain. More women die of cholera than men; and the breeding or child-bearing period of life is the age most liable. That women enfeebled by pregnancy and lactation should fall easy victims to epidemic cholera, then, is rational, and conformable to observation; but let a poor, one-kind of diet, be used, such as the lower classes must be restricted to, under the high prices of provisions after short crops, and the sudden deaths after delivery or under attack of cholera are explained. The restricted regimen and inaction of breeding women in the better walks of life, inlaying the scorbutic diathesis, explain the happening of these cases in the higher walks of life. But further than this, we have reason to fear that much evil has resulted to whole municipalities from erroneous doctrines

inculcated by the medical profession regarding diet during the raging of epidemic cholera, proscribing the daily use of succulent vegetables and fruits. In this way the inhabitants of our cities have been dieted by medical opinion, most unphilosophically it seems to us, to guard the body politic against its spread. Certain prudent families that we have known to be attacked with cholera, have been so observant of abstaining from vegetables and fruits, as not to eat any for many weeks prior to cholera breaking out, thus, no doubt aggravating the epidemic by inlaying a scorbutic taint.

Our views, then, of the scorbutic diathesis underlying cholera, explain many of the phenomena seen in the disease, but considered heretofore very occult, even mysterious; as for example, how, or why it is, that certain families all die off with cholera, while their neighbors exposed to the same atmospheric influences, but not the same diet, all escape attack; why immigrants, one half of whom are doubtless scorbutic on landing, are the peculiar delight of the disease; why it breaks out at sea in emigrant ships, occasioning such mortality; why it follows armies, appears in camps, and besieged cities; why its supposed birth-place is burning India, where rice is the one article of food of the poor; and why it revels in the snows of St. Petersburg, where the serfs feed on train oil. We might pursue the thought still farther, in explanation of the vernal appearance of the disease, after cold winters, retarded springs and short crops; its lying dormant in the city of New York from autumn till spring, while at the quarantine hospital, under a routine dietary, it found subjects even in autumn; indeed, there is hardly one of its strange vagaries that is not elucidated by the view here taken of it, to wit: that the scorbutic diathesis underlies it; and gives the chief sting, in fact, to all our epidemic forms of diseases—explains why they are so mortal during certain years.

We plead guilty, however, of great dullness and tardiness in discerning the all-pervading evil influence of the faulty dietary of a city or country in producing disease; and of narrow mindedness or professional bigotry in forever localizing the scorbutic taint; but so we had been taught—taught that scorbutus was one disease. The views here presented have

come little by little from patient observations made at the bed-side, through a cycle of nearly twenty years; they have been forced upon us by truths too obvious to deny; we have been obstinate and unyielding in our adherence to the dogmas of the schools until every prop has been cut from under us by repeated multiplied evidences that it is to an erroneous dietary, inlaying scorbutus, and not to "occult qualities of the air," as has been taught since the days of Sydenham and long before, that we are to look for the cause of pestilence and the desolating mortality of the epidemic diseases of certain years. Our eyes are at last opened to a comprehensive vision of the certain and inevitable power for evil of the impoverished dietary of a people or nation, during years of blight and scarcity of vegetable food and fruits, and we now understand the reason why epidemics have, in those years, such uncontrolable sway. We speak of any epidemic form of disease whatever, not of cholera in particular. Our observations have been general, and our conclusions are general. Our opportunities for observation have been ten to one greater in the bilious fever epidemics than any other; which we have observed to *invariably* break out with violence after cold, wet seasons, droughts, frosts, and blights; after the whole community were laid under the putrid influences of scorbutus. But we have observed too, that the out-breaks and aggravation of small pox, measles, and scarlatina, were also coincident with disastrous years, when whole families were displaying unmistakeable evidences of the scorbutic taint. We are satisfied, therefore, that the scorbutic diathesis is the great and hidden element of *aggravation*, if not the *ultimate cause* of these epidemic forms of disease also, as well as of bilious fever, cholera, and cholera infantum; startling, innovating, or "*alarming*" as the view may appear, and as it has been expressed to us. It explains the origin of the *first cases;* and these diseases are reappearing de novo during every pestilential period.

We confess to have been dull, however, in practice, compared with what this revision of our pilgrimage at the bed-side calls for. We were bound hand and foot, handcuffed and fettered by nosology all the way. Notwithstanding, we saw scorbutus all the time, we were forever localizing it, and con-

sidering it one form of disease among many, as we regarded a fever, or the inflammations—for this is the doctrine of the schools—and of course we overlooked it as the *foundation* of the ailments we treated in innumerable instances. Were we to retrace our foot-steps, we know not now where our antiscorbutic treatment would not be instituted, for the taint looms in the distance, and appears to us in these reminiscences as a ubiqueous affair, a sort of ORIGINAL SIN contaminating the whole people. We are now of the opinion that the surest method for escaping cholera, or any other epidemic disease, lies in the prior and continued observance of a judicious antiscorbutic regimen, or an omnivorous dietary of meats, vegetables and fruits, and regular exercise—conforming to nature's laws.

CORROBORATIVE EVIDENCES OF THE PREVALENCE OF SCURVY.

Our observations as to the prevalence of scurvy are fully confirmed by the observations of other physicians who have contributed their testimony to the medical journals, and which we take leave to transfer, or such extracts at least, as set the matter at rest. These extracts show that scorbutus is an insidious, pervading, but overlooked essential element of disease, in the United States; that it broke out in the Ohio Penitentiary in 1835, the year of our first noticing it in Illinois; and that it prevailed in and out of the Commercial Hospital, Cincinnati, during the prevalence of cholera in 1850, whilst we noticed its presence at Chicago. Furthermore, it has prevailed in sundry places epidemically in Europe within the period of our observations, and has broken out in sundry hospitals and prisons. Several valuable papers have been written on the subject by eminent observers of these epidemics, giving a minute account of the disease as it appeared in different places. These monographs constitute valuable contributions to medical science. We shall refer in another connection to these articles as throwing additional light on scorbutus beyond what the records of former days have left. The truth is, the old fashioned, chronic form of the disease has been so hushed in modern times—almost ban-

ished both from sea and land—that there are many physicians, now grown old in the duties of the profession, who have never seen a case of scurvy, so they say, or if they have encountered it, did not know it. This is believed to be the reason why the nursing sore mouth affection has not been understood and its true nature long since revealed.

Dr. Holmes' Paper on Masked Scorbutus.—The St. Louis Medical and Surgical Journal for March, 1848, vol. V. No. V. p. 417., contains an article entitled, "*Some remarks on Scurvy:* by R. S. Holmes, M. D., *of St. Louis, late of the United States Army,*" which especially corroborates our views. Dr. Holmes, says,

"My attention was particularly called to this disease, by many well marked, yet rather anomalous cases of it, that I witnessed with the army in Florida. I have seen it elsewhere since then, throughout the United States, and in Mexico, and I am convinced it is often overlooked or not suspected; that the names of other diseases had been given to it, [undoubtedly] and that from its diversified character, it defies all attempts at a complete history of its symptoms. [Even so.] The only well-marked proof that many diseases I have seen, have been affected by the scorbutic constitution of the fluids, has been in the *cure;* [yea verily], if an inflamed eye, or an ulcerated leg, is cured by a drink of acids and a diet of vegetables, when the patient, for some time previously, has been living on salt provisions, and without vegetables, it affords presumptive proof that the disease is of a scorbutic origin. [Proof positive, rather].

"Scurvy stamps its impress on diseases very much in the manner that malaria [a word cloaking our ignorance] is in the habit of doing. [Mark this, reader]. There is no disease that is not capable of taking on a scorbutic character [the cart is here put before the horse]—as far as I have had an opportunity of judging—even although the accredited symptoms of scorbutus itself may not be present, [mark this]: nay, I believe there is scarcely an individual among the many who escape when exposed to scorbutic causes, who has not within him the *leaven* [mark the emphatic expression] of the disease, capable of giving signs of its presence, if not by absolute symptoms,

still by the stamp of the scorbutic diathesis *on* any other disease to which the system may be liable. [Rather, it should be said *under* any disease, for the diseases are the *epiphenomena*, according to Dr. Barnes of the London Hospital, and as we think].

"It is a great error to suppose that, in all cases of scurvy the gums are affected, [unquestionably it is] or that the patient is depressed in spirits, or that he has a peculiarly sallow look, or that he looses his strength, or has livid colored patches, as if of extravasated blood beneath the skin; these may all be present, or not one of them, and yet the patient will have scurvy. [Often dies of it before these later symptoms are developed]. How then, it may be asked, do you recognize the disease? we answer, by the certain causes that are known to produce it, and by the readiness with which acids or vegetables act favorably. * * * * * A very universal sign of the disease in Florida was, the superficial extended ulcerations or bullæ, giving rise afterwards to suppuration. * * * * I have had patients for three months on the sick report, with this inflammation, when the cure was probable, brought about at the end of that time, by the antiscorbutic diet that was habitually used in the Hospital, as far at least as circumstances would permit: yet afterwards [when it was understood to be scorbutus] I was in the habit of curing these inflammations in a few day's time by drinks of lemonade, [just so] or what is better, I think, by a mixture of vinegar and the nitrate of potash, [potash again] in as large doses as the stomach will bear; and by a diet of potatos, and if you please, salt beef or pork also [common salt is a most valuable antiscorbutic]; for it is not the *presence* of these articles, but the *absence* of acid vegetables that produces scurvy. * * * * Another one of the most common forms of disease, in which scurvy betrayed itself, was in the inflammation of the conjunctiva, or lids of the eye. I am not certain that this disease was of a scorbutic origin, but certainly no sooner would such an inflammation set in, than it was seized upon and overshadowed by the scorbutic diathesis, and I am much inclined to believe that this inflammation was caused by the seeds of the scurvy in the

system. [You have it sir]. Ulceration of the cornea was another very common form of disease of the eye, in which this diathesis played the chief part. [If not the whole].

"Soldiers subject to the phlegmasiæ, and also to a scorbutic diathesis were among our most frequent patients in Florida: the relapses were so frequent that such men were hardly ever out of the hospital. [Relapse is a law of scurvy]. By the aid of a proper diet, we could easily accomplish a cure for the time being, but the disease would return in a week or ten days after the diet, peculiar to the troops was used. [Exactly so].

"I wish to call the attention of your readers to this disease, for I am convinced it is a much more common one in the country than is generally supposed. [Yes indeed]. It is a great error to believe that because one lives out of a town, that fresh vegetables can be procured; the country, as far as my experience goes, is often the most difficult place to get them. [Hear]. Potatos could never be had at most of our frontier posts, were they not cultivated by the soldiers themselves, and preserved during the winter; and it is quite a source of profit to the soldiers to sell their extra supply to the country people around for their own consumption; they are the great prophylactics in scurvy, and generally the only vegetable used during nine months of the year, in the northern parts of the United States. But the supply in new settlements is often very limited, [hear] while in the lumber regions of Maine, New York, on the head waters of the Mississippi, and in the mining districts of Illinois, Wisconsin and Iowa, the workmen are deprived of any vegetables whatever for many months of the year; [hear] their diet consists of pork, beans, hard bread and coffee. [What we have so often repeated]. No conception can be formed by any one who has not been much in the untrodden ways of the country, of the extent to which salt pork is used, [hear] not that *it* produces scurvy, but the facts are, that where it is much used, vegetables are not, for the simple reason that they cannot be procured." * *

Remarks.—Dr. Holmes, it appears, had but recently left the army at the date of his article. He speaks of having examined a recruit at Fort Snelling a few months previously,

and passed him, though he had a slight ulceration of the cornea. He tried to heal that ulcer for two months, at which time it was worse than when he commenced. The man had been working in the lead mines. This explained the case. He was put under antiscorbutics and in two weeks was well; proof positive that it was scurvy.

The testimony of Dr. Holmes is most valuable. It proves the great prevalence of the scorbutic diathesis; its Protean character; its masked symptoms; hidden implantation in the the system without any signs, or any that are generally noticed; its universal or "*malaria-like*" impress, and the negative proof of treatment often the only proof of its presence. His testimony also to the scarcity of vegetables in the new settlements of the western country is very important. Had Dr. Holmes been engaged in general practice, the nursing sore mouth form of scorbutus would not have escaped his penetrating eye, it is believed. We make no apology for extracting so liberally from Dr. Holmes' paper, it being to our purpose exactly; for it is our intention to compass this question fully, and settle the matter, if possible, beyond a question by this inquiry, as to the nature of the nursing sore mouth affection.

Dr. Dawson's Paper on Scurvy in the Commercial Hospital, Cincinnati.—In the Western Lancet for Dec. 1850, vol. XI, No. XII. page 759, is an article entitled, "*Scurvy as it appeared in the Commercial Hospital during the summer of* 1850: By W. W. Dawson, M. D., Resident Physician;" which establishes the fact of the prevalence of scurvy in Cincinnati, simultaneously with our observations of its prevalence at Chicago during the raging of epidemic cholera there. The cholera was also raging in Cincinnati at the same time. Dr. Dawson says:

* * * "The first case which occurred was in the lunatic department, in an old simple woman who spent her time alternately between this department and the poor-house. * * *

"Upon examination of the house, to see to what extent it was prevailing, thirty-two cases were found. Twenty-nine of them were in the lunatic department, fourteen males and fifteen females. Two cases occurred in the eye department of

the surgical ward, and one was admitted into the house on the 18th of July, who had been affected for five weeks.

* * * * * * * * *

"It would hardly be expected that these persons would be thus afflicted when I detail their bill of fare. They had boiled rice twice a week, boiled hominy three times, salt beef and pork twice, fresh meat five times, bean soup once, and beef soup with cabbage boiled in it, six times. Bread and coffee for breakfast, and bread, butter and tea for supper. [Only one succulent vegetable, cabbage, and probably very little of that in the soup]. During the winter and up to the first of April they had boiled potatos once a day and a liberal amount of cabbage. This last was continued during the summer, and whilst living upon these articles they contracted the disease. * * * * * * *

"The remedies were more dietetical than medicinal. A liberal amount of boiled potatos was added to the bill of fare, and a drink composed of water acidulated with citric acid, and sweetened with white sugar so as to be agreeable to the taste, and mild aperients to keep the bowels open constituted the treatment. Improvement began, in most of the cases, in from three to five days, and at the end of three weeks it had entirely disappeared from the house."

Remarks..—The symptoms of these cases have not been copied, the object of the quotation being to show to what extent the scurvy was observed in Cincinnati coincident with our observations at Chicago, during the raging of epidemic cholera. The case admitted into the hospital from the city, 18th July, for five weeks affected, proves that the scurvy was prevailing in Cincinnati out of the hospital at that time, and at the same time the cholera was epidemic in the city. The absence of potatos from the dietary during the summer was doubtless the cause of the outbreak of the disease in the institution.

Nothing is said of the cholera cases that occurred in the hospital, which were doubtless numerous. Only the chronic form of scurvy is held to be scurvy now-a-days. And why if cholera is scurvy, did not all the chronic cases of scurvy take on a serous hemorrhage, from the stomach and

bowels and go into cholera? Such questions as this are often put to us as *posers*. We will answer by asking why malarious fever has three or four common forms, and as many more common types, to say nothing of the thousand and one *masked* forms and types as they are considered? Can any miasmatist answer this? No: we may wait till doomsday for a satisfactory answer through the malarial hypothesis. A poison received into the system produces uniform results—this is the science of toxology. But who is wise enough to say what will be the symptoms, pains, aches, distresses, and varied phenomena in a community of men, women and children rich and poor, bond and free, prudent and reckless, drunk and sober, etc., under partial starvation; under want for a long time of the vital stimulus of wholesome food? no one. They will be varied by age, sex, habits, complexion, constitution, organization, condition, clothing, place of living, place of sleeping, occupation, exercise, sloth, laziness, over-exertion, fear, cowardice, irresolution, melancholy, surrounding friends, surrounding comforts or otherwise, general climate, local climates, season of the year, state of weather, changes of the weather, changes of the moon even, stage and degree of the scorbutic taint, and a thousand other things easier imagined than said, but which we know to be operative in shaping the epiphenomena of disease, after the foundation is laid. This explains the whole matter; or if it does not:

Again, when one variety of scurvy has shaped its course, or has had it shaped by inherent and surrounding circumstances, as above, it does not often change into another variety; this is the *rule*: but sometimes it does, and these are the *exceptions*. The old authors say this, and so say the late writers since the Irish famine who describe five varieties of recognized, well marked scurvy. But when we, who have entered on the last half of the nineteenth century, see malarious fever change to typhus, scarlet fever to measles, cholera to dysentery, and dysentery to scorbutus we record the facts with amazement, so uniform are the fashions of disease when once shaped—the phenomena, or rather the "epiphenomena," upon which we have been accustomed to look and to *call* diseases, without "ascending to the primary pathological condition."

DR. WRIGHT'S PAPER ON SCURVY IN THE OHIO PENITENTIARY. IN 1835.—In Vol. 1. No. 1. of the "Western Quarterly Journal," for June, 1837, is an article entitled, "*Remarks on Scurvy as it appeared in the Ohio Penitentiary in the year* 1835. By M. B. WRIGHT, M. D., of Columbus, Ohio." (Now of Cincinnati). This paper corroborates our observations of the scarcity of vegetables in 1835, and the prevalence of scurvy. Dr. Wright says,

"In the winter of 1835, the scurvy appeared among the convicts of the Ohio Penitentiary. It continued under various modifications throughout the summer, and occasionally exhibited its peculiarities during the autumn. * * * *

"As is well remembered there was a great scarcity of vegetables during the winter in which the disease under consideration unfolded itself, and it was difficult to procure the needful winter supplies for the prison. The diet, therefore, mainly consisted of bread and meat. Potatos, as purchases could be made, were sparingly used. * * * * *

"It will be perceived that the disease was insidious in its approach, and secret in the plan of its operations until brought to light by accidental circumstances. * * *

"Nothing was so beneficial as the solution of nitre in vinegar—Nit. potass, ʒiv, vinegar, 1qt., of which a table spoonful was given every two or three hours."

Remarks.—Dr. Wright's paper, as we have said, confirms our report of the short state of the vegetable supplies in the winter and spring of 1835, and the prevalence of the scorbutic diathesis. The breaking out of the scurvy in the Ohio Penitentiary is ascribed to a deficiency of vegetable food. If "difficult to procure the needful winter supplies for the prison," the vegetable dietary of the regions round about Columbus must have been abridged. Perhaps the blighting causes that abridged the crops in Illinois were felt throughout Ohio, Indiana, Missouri, and other States in the Mississippi valley, and if so, and our observations of a severe bilious fever epidemic in the summer of 1835 should be confirmed as an effect thus extensive, our views of the cause of the summer epidemic will be greatly strengthened. This is within the remembrance of thousands of practitioners, if not on record in the

journals, and will be recurred to. If the principle shall come to be admitted that the scorbutic diathesis is the cause of much of the sickness of the newly settled States, humanity is deeply concerned in the Inquiry before us, and the principle will become a future element in sanatory surveys and regulations for guarding the public hygiene.

TREATMENT AND PREVENTION OF NURSING SORE MOUTH.—If the reader will but recur back to the treatment of Dr. Hale, who first described this anomalous affection, he will perceive that his main remedies were our best antiscorbutics, to wit: bicarbonate of potash and lemon-juice in the form of effervescing draughts, acidulated beer, porter, with nourishing diet, and tonics. It is impossible for us, *wittingly*, and will puzzle practitioners, now they are fully advised of the scorbutic nature of this affection, to prescribe any better remedies. Quinine in small doses is probably the best tonic.

Drs. McGugin, Holt, and others speak of the hydriodate of potash as almost a specific, in this affection, and no doubt it may be a good remedy; but the carbonates, and citrates, and tartrates, of potash and soda, are very much better.

Dr. Taylor commends the cream of tartar as a specific, (tartrate of potash) and it doubtless is a much better remedy than the hydriodate of potash. The nitrate of potash, has been found a valuable remedy in scurvy, but does not appear to have been empirically hit upon by any in the treatment of the nursing sore mouth affection.

Dr. Judkins begins the treatment with bicarbonate of soda, by the teaspoonful, almost, dissolved in water and drank freely of, several times a day, to correct, as he says, the acid and acrid state of the secretions of the stomach and bowels. The reputation Dr. Judkins enjoys for success in the treatment of this affection depends to some extent, no doubt, upon the antiscorbutic virtues of this salt of soda.

With these facts before the reader, and the treatment detailed in the cases (See case No. 1.) of the nursing sore mouth affection we have reported in this essay, little room is left for any further hints in this place on the treatment of the *nursing sore mouth*, which we presume our readers, one and all, now consider the same disease as scurvy.

The prevention of the nursing sore mouth, calls for a few additional remarks. It is common for breeding women to be affected with "morning sickness," to have longings and cravings, and in the latter months to be troubled greatly with heart-burn or sour stomach when the womb rises up so as to press upon that organ. These phenomena show an interference with the digestive function, and explain how it is that, breeding and pregnant women are rendered so liable to attacks of this affection. During lactation, again, there is so heavy a drain upon the system from nursing an infant, that this circumstance coöperating with defective alimentation and imperfect assimilation, is very apt to develop it. Delicate women cannot withstand the combined influences of sedentary habits, the morbid effects of pregnancy on the digestive functions, and lactation during the spring months when there is an interregnum of vegetables—they inevitably become more or less scorbutic. We have seen the most lovely specimens of the sex destroyed by nothing in the world but *restrictions in diet* during the first pregnancy, and we have known two physicians' wives victimized by the same mistaken policy, during their child-bearing period in Illinois. The very fact that the blood of pregnant women always presents a buffy coat, shows there is an increase of fibrin, or tendency to scorbutus, and that they should have plenty of sour punch rather than suffer venæ sections; and that they should be ordered to have acid drinks, and beef, potatos, turnips, cabbage, and other substantial food, rather than physic. If succulent food runs into fermentation, let this be corrected by a draught of soda. It is both antiscorbutic and palliative. As much exercise in the open air as can possibly be indulged in, and the suitable use of tea as a beverage and even wine to prevent anxiety of mind, despondency, forebodings, and depression of spirits, will be found good prophylactics against this insidious affection. The daily use of about a tablespoonful of Stoughton's bitters, with attention to vegetable diet, has carried several women under our care through pregnancy and lactation free from an attack of this affection, who had been its regular subjects before. We lay but little stress or value upon the bitters, and yet the stomach does its duty better with, than with

out it. We have also found the citrate of iron and quinine in solution a most valuable antiscorbutic tonic, and prophylactic against nursing sore mouth. In the malarious regions of Illinois, where we have encountered this disease so much and oft, where palor and anæmia are almost a matter of course with child-bearing women, this remedy and preventive answered the indications fully. We do not think it necessary to advise weaning or the suppression of lactation as a preventive measure, even in those women who have suffered an attack with every infant born, unless there be a complication of difficulties, and the necessity is then to be judged of by the attending physician. Where the digestive organs are able to perform their duty, and our directions are carried out in regard to diet, exercise, and adjuvant stomachics, no woman need wean her infant either as a preventive or curative measure.

Conclusion.—It was our original purpose in the preparation of this paper to add a chapter on the scorbutic diathesis, indeed such chapter was prepared, to serve for comparing the symptoms of nursing sore mouth with those of scurvy. For it is only by carefully studying the phenomena presented in scurvy, and then comparing them with the symptoms of the nursing sore mouth affection, that just conclusions can be drawn as to the identity of the supposed two diseases.

Our researches, however, having led to the discovery of the cause of cholera and cholera infantum, and having prepared and published essays on those subjects, we found it necessary to amplify our sketch of scorbutus and show its relations to those anomalous affections as well as to nursing sore mouth. This arrangement, of course, throws the subject of scurvy into a separate essay, and connects the whole series. We fully agree with the older writers, that the poisoned condition of the system known as the *scorbutic diathesis* is the source of a large class of diseases; and we expect to make this matter clear, by the light that physiology and chemistry have shed since the days of Sydenham, that master spirit of his time who did more than any other physician, doubtless, to hoodwink the profession on the above great truth, and

establish the position he contended for, viz.: that *scurvy was but one distinct and uniform disease;* an error that remains to this day. We can show his reasoning, now, to be fallacious, and shall do so in the proper place.

Whoever will examine the article on scorbutus in the Cyclopedia of Practical Medicine, will find that the word *scurvy* comes from the Saxon noun *scurf*, signifying exfoliations from the skin; a dry, scurvy state of the skin being a symptom, and which is also a symptom of the nursing sore mouth. The term is therefore found to be of modern origin. When it received this name among the northern nations of Europe, it was believed to be a new disease, as the nursing sore mouth is now. Although Hippocrates is said to have described the symptoms and pathological condition under the head of diseases of the spleen, and also in his Convolvulus Sanguineus (op. cit). still the name is, as the disease is *supposed* to be, of modern date; and Lind and others therefore contend that Hippocrates knew nothing about scurvy.

The term *scorbutus* is said to be of Dutch origin, a Dutch word metamorphosed into Latin; *scorbeck* in Dutch meaning *sore mouth;* another prominent symptom! Lind thinks it may have come from a Danish word, *schorbock*, which means *the gripes;* another prominent symptom! Now here are three of the *diagnostic* symptoms of *nursing sore mouth*, giving origin to the very nomenclature of *scurvy*, and yet the profession has not discerned their identity!

The term *stomacace* used by the Roman physicians in describing the disease, (op. cit). comes from the Greek, and means also *sore mouth!* from which we have *stomatitis*, inflamed or ulcerated mouth; and *stomatitis materna*, and *stomatitis nutricum*, are terms used by some as the most proper appellation for the *nursing sore mouth;* innocent, however of the scorbutic meaning!

With the mere recital of these facts we close this lengthy inquiry, leaving the reader to decide whether or not our conclusions are correct. Entering more at length into the history of scorbutus in this essay, does not now comport with our arrangement; but from this point we naturally glide into a more elaborate discussion of the subject in our next essay.

Blights and Cholera in Barbados.—All our readers, doubtless, remember the ravages of cholera in the West India Islands in 1854, and its very great mortality in Barbados. We have ascertained authentically that blights in vegetation, dearth and scarcity of succulent food and fruits were its heralds. Dr. Wm. H. Freeman of this city [Philadelphia] resided three years in Bridgetown the metropolis of Barbados. On the breaking out of cholera, in June 1854, he volunteered his services to the authorities of the island, and practiced, without hope of reward, through the epidemic, to his praise be it said; and it is but justice to add was one of the volunteers to the scourged city of Norfolk in the summer of 1855. The doctor endorses our views of the cause and nature of cholera, and says they are sustained by the phenomena that attended the outbreak and spread of it in Barbados. There was, he says, a succession of blights in the island. The yams, eddoes, sweet potatoes and fruits usually growed there failed in consequence of droughts; the resevoirs of water became low, stagnant and corrupt; imported vegetables and fruits were high in price and noxious in quality or condition, and the poor were necessarily thrown upon a diet of salted meats and fish with bread—molasses and water to wash it down and fill up. Many of the imported supplies were condemned, and sold, and thus became the tainted and corrupted food of the poor. The doctor says he predicted the outbreak of cholera there, months before it occurred. He says furthermore, that he noticed the evidences of the scorbutic diathesis, in numerous instances in which injuries, wounds, and ulcers, refused to heal. One case of ulceration from a musquito bite on the penis ended in death! This explains phagedenic veneral ulcerations.

Letter from Dr. Byington.—Prof. Knapp—Dear Sir:—I have read your essays on the nature, cause, cure, and prevention, of epidemic cholera and cholera infantum with much profit. The facts and arguments therein set forth seemed so clear and conclusive to my mind, I determined to test their value in practice. I have observed the signs of the scorbutic diathesis in many cases of chronic affections of the alimentary canal, which had resisted the usual mode of treatment; but by pursuing the course recommended by you, have been agreeably surprised at the prompt improvement. I have thus successfully treated a number of cases of cholera infantum, existing under very unfavorable circumstances, viz.: premature weaning; in fact in all affections falling under my care, if I can discover the scorbutic groundwork, as described by you, I administer antiscorbutic remedies, and order vegetable diet as far as consistent with peculiarities of the case, and generally with success. I find, since my attention has been called to the matter, by inquiring into the kind of food usually taken by a large portion of the inhabitants of this city (and doubtless it is much the same in other cities) that bread, butter, tea, coffee, and a moderate amount of meats, constitute the staple of their diet; succulent vegetables not being considered an essential element of their daily food, particularly among the delicate, with feeble appetite; hence the condition of system described by you is doubtless much more common than might have been imagined, and probably determines the particular type of many of our diseases. It seems to me that I can now understand why those affections characterized by general debility and relaxed condition of the various tissues, resisted the usual tonic treatment, with bitters, iron, etc., for I have seen the same cases under the acid, quinine and brandy treatment, assume a new and vigorous vital activity. I am so far highly pleased with the results following *your* suggestions; but whether or not future experience will corroborate *your* theory to the extent advocated by yourself, can, of course be proved only by experience and observation. I trust however, you will be fully borne out in every particular; and cheerfully will I contribute my humble efforts to investigate a principle, which, if correct, will result in immense good to our fellow men.

W. C. Byington.

Philadelphia, Nov. 2, 1856. 135 Spring Garden Street.

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RESEARCHES

ON

PRIMARY PATHOLOGY,

AND THE

ORIGIN AND LAWS OF EPIDEMICS;

IN TWO VOLUMES:

By M. L. KNAPP, M. D.,

MEMBER OF THE MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND; LATE PROFESSOR OF MATERIA MEDICA, AND PRESIDENT OF THE COLLEGE OF PHYSICIANS AND SURGEONS OF THE UNIVERSITY OF IOWA; LATE PROFESSOR OF MIDWIFERY AND DISEASES OF WOMEN AND CHILDREN IN RUSH MEDICAL COLLEGE; AUTHOR OF "LECTURES ON THE SCIENCE OF LIFE INSURANCE," ETC.

VOL. II.

Morborum omnium unum et idem modus est, locus autem differentiam facit.

HIPPOCRATES.

There is but one fever. * * * I use the term diseases in conformity to custom, for, properly speaking, disease is as much a unit as fever.

RUSH.

PHILADELPHIA:
PUBLISHED BY THE AUTHOR.
1858.

Entered according to the Act of Congress, in the year 1858, by
M. L. KNAPP, M. D.,
in the Clerk's office of the District Court of the United States for the
Eastern District of Pennsylvania.



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TREATISE

ON THE

SCORBUTIC DIATHESIS.

By M. L. KNAPP. M.D.



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TREATISE

ON THE

SCORBUTIC DIATHESIS.

CHAPTER I.

THE SCORBUTIC DIATHESIS IS PRIMARY PATHOLOGY.

SECTION I.

HISTORY, DEFINITION, CAUSE, AND ESSENTIAL NATURE.

IMPAIRMENT of nutritive life is the foundation of "the pestilence that walketh in darkness." This truth is finding expression in a less direct manner than it is here uttered, through various channels. The current leading journals of medicine abound with evidences that the subject of nutrition in all its relations to the healing art—to chemistry, physiology, therapeutics, and especially to pathology, is engaging the professional mind with great zeal and hopeful promise. Deranged assimilation, as the origin or cause of disease, and the proper diet for the sick, are being made the theme of discourses, lectures, and reports; and even the more elaborate systems, treatises, and standard contributions to medical science, are testifying with more and more profound emphasis, the vast importance the subject of impaired nutrition holds in the domain of practical medicine. Rokitansky's Manual of Pathological Anatomy may be instanced as a marked exemplification of this, and of the great truth expressed in our first sentence; for it holds, vol. i. page 71, that all local diseases, even the phlegmasiæ, for instance, are the offspring of a general dyscrasia of the blood, unfitting it for the service of nutrition: —the "anomalies [impairments] of nutrition" constitute the

burthen of the book. The leading cultivators of medical science in the United States, with whom it has been our happiness to interchange thought and expression on this subject within the last two years, and our opportunities have been great, have generally endorsed this view of the origin of disease, viz: that all disease is the result of impairment of the nutritive function; have done so invariably, perhaps, when it has been presented as a simple proposition; when, however, impairment of the nutritive function has been held to be essentially synonymous with the latent morbid condition called the scorbutic diathesis, (the position we are driven to after much careful research,) some have joined issue with us; more have remained non-committal; and a respectable number have endorsed this new view or doctrine. The name by which it has appeared to us, this primary dyscrasia should legitimately be called, rather than designated by the vagueness of an *anomaly* conveying neither clue to its cause nor indication for its removal, has appeared to be a stumbling block in the minds of some, and further time for reflection seemed to be required to settle the question. A correspondent of this class thus expresses himself:

"I am somewhat at a loss in defining my position in reference to the doctrine upon which you base your new theory. During the last half of my professional life, I have each year become more inclined to yield consequence to the general constitutional abnormities under which special diseases are developed, and I have been in the habit of assigning those evil tendencies in the constitution to a dyscrasis of the blood. The question to be determined, in order that I may give even a more extended application to your theory than you have insisted upon, is, are these primary pathological conditions to be regarded as *scorbutic*, or is the *diathesis* non-scorbutic? I believe it has been pretty universally conceded that the dominion of cholera is restricted to those subjects whose systems have been, from the operation of certain unknown deleterious agencies, deprived of the power of resistance to the inception of disease; which is just a little short of the complete recognition of a *cholera diathesis*. It can no longer be matter of doubt that cholera supervenes upon a pre-existent

aptitude to disease, engendered either by the withdrawal from the economy of those materials essential to preserve it in a state of healthful integrity, or by exposure to the operation of agencies capable of impressing the constitution with peculiar morbid conditions. These, in my humble opinion, are the conditions with which epidemics, especially of the more malignant type, hold an intimate relation. If your doctrines in reference to cholera can be practically maintained, we need no longer urge the importance of a more discursive line of investigating the etiology of disease; and until we shall have adopted the proper starting point, the ends and aims of our researches can never be consummated: the thing must be traced from its origin — from its very source.

"Now, I am not prepared to say that a well-marked, unmasked case of scurvy has ever occurred in my practice, but I have been able frequently to detect minor degrees of the scorbutic condition, masked by a variety of other ailments. This fact has been so forcibly impressed upon my mind, that I am almost fully prepared to subscribe to some recently published views of Dr. Barnes, of the London Hospital. He says, 'patients present themselves at the hospitals, complaining of various ailments, such as rheumatism, fever, gastralgia, debility, hemorrhages, dysentery, etc., the scorbutic taint being masked by the more prominent diseases. He regards it as certain, that if the more prominent diseases have not in *all* cases arisen as secondary affections upon the scorbutic degradation of the blood, yet that their nature and course are so modified by this complication, that it is necessary to take the scorbutic taint into consideration in prescribing the treatment.' By the way, I will advise you to examine these reflections of Dr. Barnes, which you will find in the London Lancet, June, 1855, page 533. They are certainly very interesting, and have a direct bearing upon the investigations with which you are at present occupied, and inculcate pathological tenets, upon which you will not be likely to make an issue with the doctor. I am, and have for some time been, persuaded that pathologists have, until within a recent period, been too much disposed to study those manifestations to which

local lesions immediately give rise, rather than ascend to the primary pathological conditions. From such a stand-point we should soon learn to regard the local lesions as sequents, developed in the progress of a more general pathological condition."

Then, according to these philosophic views of our able correspondent, Dr. J. P. Hall, there is either a broad, basic, germinal root or substratum of latent pathology invisible, or scarcely visible, as we may say, to the naked eye, and which may be regarded as the foundation or *predisposition* from whence all active forms of disease spring, or there must be as many specific, independent germs, or poisonous substantive, seedling origins, as there are classified diseases in the nosological arrangements. Now, which is the more probable? Dr. Hall and Dr. Barnes, whom he quotes, incline to the former view, viz: to the doctrine of a one germinal root of all disease, and Dr. Barnes it would seem, holds that the primary pathology is scorbutic, the same as we hold, while Dr. Hall is not positive, but inclines to the adoption of the same view. Thousands of minds in the profession are, like Dr. Hall, forced, as they advance in knowledge acquired by observation and experience, to abandon the plurality doctrine, and to generalize the causes of disease to some comprehensive unity, as more in accordance with reason and the simplicity of nature's laws, than the doctrine of specific causes and independent entities. Hippocrates, Galen, Rush, Hahnemann, and many others have advocated either directly or impliedly, the doctrine of the essential unity of disease, but without shedding any very clear light, however, as to the cause and nature of that one disease. Nor is it important in itself what the primary pathological condition, if found, should be called. Names are indeed nothing, abstractly considered: still, if a definite meaning is attached to a term, and this has been the meaning for centuries, and this term suggests a broad and general therapeutic indication, or outline of the rational treatment and prophylaxis, as does the adjective term *scorbutic*, when qualifying disease, it is altogether better to use it than to invent a new one for expressing the same pathological condition, though the signs of the diathesis be "masked"

as Dr. Barnes finds them "by the more prominent diseases," and the taint only revealed through the efficacy of antiscorbutic treatment.

We stand not alone, then, in the use of the name given to this broad substratum of disease, which, by virtue of treatment, has been proved to exist as well as by the objective signs, in numerous special diseases, referred to by Dr. Barnes, — also in cholera, cholera infantum, and other epidemic forms of disease. We are clear, therefore, for retaining the term by which this foundation of disease has, for ages, been called, and our purpose in this essay is to examine its scope. Dr. Holmes, whom we have quoted in a previous essay, (see vol. i. p. 300), sanctioned the same use of the term, and the same views are maintained in his paper, as to the masked character and ubiqueous presence of the diathesis. In applying the theory of the scorbutic diathesis, then, to the solution of the problem of cholera and other epidemics, we have only made a new application of a well-known principle, and nobody can say we have not assigned an adequate cause.

That we have not stepped one inch beyond a wholesome generalization in this matter, is demonstrable by the following opening paragraph to a clever essay on cholera, published in 1849, the production of Dr. J. P. Batchelder, of the city of New York, a veteran practitioner.

"The fact is that through certain phenomena presented with tolerable uniformity by epidemics, there runs an analogy which, taken in connexion with circumstances attending their movements, progress, and termination, has led to the thought that their causes, although involved in impenetrable obscurity, may be few—similar—perhaps identical; while the effects they produced were modified by accidents, incident to their evolution, by circumstances pertaining to the subjects acted on; or by contingencies connected with season, climate, etc. This view, it must be admitted, accords well with the simplicity of Nature, producing the greatest number and variety of effects from the fewest possible causes, in which her wisdom is apparent, and manifestly different from that of man, who is prone to overlook the simple means by which her vast machinery is put and kept in motion for the attainment of

results the most grand and sublime. Ignorant of causes, we may, however, by watching the phenomena they originate, deduce the laws by which they are governed: and furthermore, by reasoning from effects, we are sometimes led to a knowledge of their causes. By pursuing this method in respect to chemical affinity, gravitation, etc., philosophers have been able to deduce and settle their laws so firmly that we implicitly and unconsciously act on them in our daily pursuits; and by patient observance, careful analogy, and study of the phenomena of diseases, we have likewise become acquainted with the laws by which they are governed without knowing their causes. In respect to Cholera this method has been unfortunately too much neglected, and the attention has been diverted from its legitimate objects; hence the failure to ascertain and settle in a satisfactory manner, the laws by which its propagation from individual to individual is regulated and determined, and also its precise nature."

There can be no question but that the failure to discover the cause and nature of cholera, as Dr. Batchelder says, has been through a misdirection of search after some specific cause, rather than a wholesome generalization of the matter to the simple cause that produces all epidemics. This cause we claim to have revealed. We have not only unfolded the law that governs cholera, but every other epidemic form of disease, yea, all sporadic diseases. Impairment of nutritive life is the starting point. Nobody perhaps will, or can differ with us this far, when the mind is closely riveted to the subject, and yet this is a vast stride from the present standpoint of the profession, gazing into the firmament after some special "epidemic influence;" but we expect to show very clearly that impairment of nutritive life and the scorbutic diathesis are one and the same thing.

If there is any just foundation in truth for the generalization doctrine maintained in the preceding essays, that the scorbutic diathesis is the latent condition of cholera, cholera infantum, &c., the first link in the morbid chain, without which those maladies would never be developed, then we have discovered the key that unlocks the secret chambers of their pathology; and if this is indeed so, is it not the master-key

that unlocks every apartment in Pandora's box? This is a comprehensive question, and its answer will call forth the examination of a great many particulars before our readers can be prepared to draw final conclusions. The idea clashes with the received opinions of the day, but this is nothing: science rests not on authority, but on facts conjugated by inductive reasoning to a grand idea as a final conclusion. Were it otherwise, the doctrine of the circulation would never have been received, innoculation, vaccination, or the revolution of the earth. We hope, therefore, that the boldness of our propositions will not deter the reader from an unbiassed examination of the argument.

How this question of the Scorbutic origin of Disease arose, and how it formerly stood.—Many of the readers of the foregoing essays, which have been published serially, have endorsed our conclusions fully as to the scorbutic pathology of the diseases treated of, but others again have ignored them, out and out. In order to enable the reader to decide this matter correctly, we have taken the pains to write this treatise, and to post up the pathology of the scorbutic diathesis, to the present time, by the light of physiology and chemistry, what the old authors on scurvy could not possibly do; and furthermore, we herein give an epitome of nearly all the writers on scurvy extant, to serve the reader as a standard of comparison. To come to the point at which we now aim, when this epitome is consulted the reader will find that the old authors believed and taught that a latent scorbutic taint or diathesis was the fruitful source, basis, or cause of a large class, if not of all diseases; that is, many of them held this view, while others strenuously opposed it as derogatory to common sense and sound philosophy, and furthermore, as establishing a platform for a routinism in practice, of murderous and horrible tendency. The oppositionists, those opposed to this new light, the party, grown gray in the faith of "occult qualities of the air" being the cause of diseases, fought bravely for what they sincerely believed, no doubt, to be the ancient landmarks of the profession, hurling their anathemas at the generalizationists, intent on crushing out the wide-spread heresy: and they did finally prevail, or, rather, the matter, went by

default toward the close of the last century, as fruit-growing, horticulture, commerce, and the peaceful arts of rural industry changed the course of living, and this, more powerful than arguments or physic, banished the most commonly conceded forms of scurvy from the land; and the introduction of lemon-juice, through the efforts of Sir Gilbert Blane and others, into the naval and merchant service, extinguished the recognized nautical varieties of it from the sea.

It must be borne in mind here, in order to fully appreciate this matter, that scurvy, when it made its *supposed* debut, in the sixteenth century, seemed to be, and was held to be, a new scourge, unknown to the ancients, and that it rapidly spread over the entire known world, and installed itself everywhere, becoming indigenous to every clime, and aping every other disease; and as the old fashioned, well-known forms of disease were continually seen to arise or spring from this new source, there was no way of explaining and settling the matter, but in either admitting two origins, for nearly all diseases, viz: the assumed ancient origin, veiled in impenetrable obscurity, and also the modern, palpable, *scorbutic* origin; or else in denying the new-fangled scorbutic origin altogether, and turning to and beating down scurvy, and making it behave systematically and orderly as one form of disease among many, and swearing that it was not a proteus. These were the respective positions of the two wings of the profession on this question, one, two, and three centuries ago, or say, running through a cycle of two hundred years, more or less; neither party wanting talents of the highest order; Eugalenus, Willis, Boerhaave, Hoffman, and others being on the scorbutic side of the question; and Sydenham, Kramer, Lind, and others, opposed to the generalizationists and their manifest inconsistency of two origins or causes of the same forms of disease. These were the erroneous grounds on which both parties stood; the generalizationists attributing diseases to scorbutus, and the ancient unknown sources or causes; and the oppositionists to the ancient, unknown, or occult sources alone. So stood this *causa belli* between our great forefathers in physic; and thus the combatants were marshalled and arrayed, and thus they gave each other battle; and thus,

verily, as the scripture says, the race was not to the swift, nor the battle to the strong, but the victory of the oppositionists was finally achieved, as we have said, through the march of civilization, horticulture, and lemon juice. Nobody has since had any clearer or better notion of the true cause or causes of either sporadic, endemic or epidemic diseases than formerly. So far as etiology is concerned, the hypotheses of occult qualities, malaria, epidemic influence, and the judgments of God (synonyms of Egyptian darkness) are still the inheritance of physicians in the middle of the nineteenth century!

Now our philosophy affords an explanation and a rationale to the views of both of those old parties, by showing that all diseases arise from *impaired nutrition* as the starting point, which is *primary pathology*, or a general dyscrasia, synonymous with the latent scorbutic diathesis.

Thus we escape endorsing the errors and inconsistencies of either party, while we plant ourself on the eternal rock of this induction, that where nutrition fails, from whatever cause, scorbutic pathology begins, generalizing disease to a known and an adequate cause, through all the world's history. We are satisfied that this is indeed the truth; that the insidious, latent, morbid condition of the system, known as the scorbutic taint or diathesis, was, is, ever has been, and ever will be, the *fons et origo* of all general diseases, or of universal pestilence. This we expect to make clear in the following sketches of scorbutic pathology. Sketches, we say, for we shall be less regardful of system, and formal arrangement, than of facts, and inductions bearing on this great question.

That we have enunciated the truth in this matter receives support from every side. Many observers have, of late, come to pretty much the same conclusions. We could name scores of physicians in the circle of our own acquaintance, some enjoying rare opportunities for observation as physicians of hospitals, almshouses, and asylums, whose views in the main coincide with ours. They who have been in the daily habit of seeing latent, as well as developed forms of scorbutus for years and years, have come to the same conclusion with Dr. Barnes of

the London Hospital, "that the deaths of thousands, registered as owing to fever, rheumatism, pneumonia, and other causes, are, in reality, to be ascribed, if we ascend to the primary pathological conditions, rather to *scurvy;* a condition upon which the fever, rheumatism, and other immediately fatal diseases are but *epiphenomena.*" He says, "It was an observation of Commodore Anson, which has been confirmed by modern experience, that those who are debilitated by advanced or *immature* age, or previous disease, are most prone to fall into a scorbutic condition. The *children* at the well-known school at Tooting, were mostly disposed to *scurvy* from bad diet before the *cholera* broke out amongst them." (*Lancet, June*, 1855.)

Now here is the embodiment of our views in a nutshell; people on all sides, infants and adults, dying of fever, cholera, etc., from an inlaid predisposition to scurvy from bad diet; the primary pathological condition being *scurvy*, so proved by treatment, and the fatal maladies but the epiphenomena of it. It is a comfortable reflection that those whose opportunities for observation have been greatest, have come to much the same conclusions we have, and that our new views are ignored only by those unfortunately enjoying less favorable fields for observation. The great idea of Hippocrates, Galen, and Rush, of the unity of disease, and the gastro-enteritic seat of every constitutional ailment, held by Broussais, as well as the ridiculed doctrine of Hahnemann, that psora was the great germ of disease; all find their solution in the generalization of it to the latent, hidden, but known dyscrasia, the scorbutic diathesis, the offspring and only child of defective nutrition.

Definition of the Scorbutic Diathesis.—The term *diathesis* comes from the Greek roots, *δια* and *τιθημι*, to place or dispose, and means a disposition to disease, or a constitutional affection of the body: a *predisposition* to certain forms of disease, rather than to others;—(F.) *Imminence morbide.* The principal diatheses mentioned by authors are, the *cancerous*, *scrofulous*, *scorbutic*, *rheumatic*, *gouty*, and *calculous.* This definition of the word diathesis is drawn from the standard dictionaries, and gives the true meaning and acceptation of the term. So far as science reveals, how-

over, nothing is clearly known as to the cause and essential nature, or the laws of any diathesis but the scorbutic; nor the grounds of any original difference, admitting there may be a dozen differing conditions to which the term seems applicable, nor can any good reason be shown why they may not all be one and essentially the same, springing from the same cause, but made to vary by accidents and surroundings. It is common to hear the term diathesis used as expressive of the constitutional state that rules, as it were, over the local manifestations of disease. In the phlegmasia, we hear it said, there is an inflammatory or phlogistic diathesis present in the system—in hemoptysis, and other hemorrhages, a hemorrhagic diathesis—in families hereditarily prone to consumption, it is said a consumptive diathesis, or scrofulous diathesis exists. It is understood, then, or the idea intended to be conveyed is, that a diathesis is a *primary or idiopathic morbid condition*, affecting the whole system, fluids and solids, whence spring active forms of disease.

The word *scorbutic* has come into use since scurvy or scorbutus has been known, and belongs to it as the adjective term expressive of that so-understood kind or quality of disease. The scorbutic diathesis, then, means that general dyscrasia which lies at the bottom of scorbutus, or scurvy, *in all its forms*, if we adopt the view entertained by most writers, that it appears under numerous or protean forms. This is our view, and the one we have often expressed in the foregoing essays, and that which will doubtless appear clear in the sequel. In giving a definition of this general dyscrasia, or primary morbid state or condition, then, we must, in order to understand it, summarily take note of the cause or causes that produce it; the laws governing it; and the remedies which remove it. Now, in a word, the want of vegetables, or defective alimentation, or whatever obstructs the nutritive function, is its cause; and this will *always* produce it:—it lies latent at first, until the vicissitudes incident to changes of season, or some other adequate impressions, excite or develop its protean forms; this is always the ruling law:—and succulent vegetables and acid fruits that take up from the soil, the dissolved salts of lime, potash, soda, iron, silex,

sulphur, phosphorous, etc., etc., necessary for the repair of the tissues, are the agents that remove it; this is *always* the remedial recourse.* Here, then, is no ambiguity; everybody understands this in the same way and manner, and if the science of medicine were equally as plain in all it propositions it would be entitled to greater consideration. This *scorbutic* diathesis, then, is clearly proved to be an *original* or *primary* pathological condition, the *cause* of which, the *laws* of which, and the *remedies* of which, are clear and comprehensible. Now it will appear in testimony from the old authors, before we close, that all forms of disease have been seen to arise from this diathesis. The same cannot be said of the cancerous, rheumatic, gouty, scrofulous, or any other diathesis; though the scrofulous diathesis is not unfrequently spoken of, and held as *synonymous with the scorbutic diathesis.* We have conversed with many physicians who hold this view, who use the terms scrofulous and scorbutic as meaning the same thing. The fact that many ailments are held to be of a scrofulous nature or origin, now-a-days, that were formerly held to be scorbutic, shows that there is a blending of the terms. There is, in fact, no line of demarkation between them. Consumption, a century and more ago, was held to be the offspring of the scorbutic diathesis; now it is held to be the offspring of the scrofulous diathesis. The ailments of puny children and feeble women were then held to be scorbutic; now they are scrofulous and nervous; but with this change of terms, we have lost sight of the cause. The cause of the scrofulous and nervous diathesis is not well set forth. Poverty, dirt, and bad air, are the alleged causes of scrofula, but there are no clear views illustrating its cause, laws, and cure, as we have shown to be the case in scorbutic ailments. Nothing has been gained, therefore, by this change in the use of terms, but a great deal lost. The reason of this change in the use of terms, will be apparent as we proceed; it will unfold itself. We wish to rivet the attention here to this point,

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* The *general* rule as to cause, laws, and cure, is here given. The cause is often hereditary, and no remedies can cure the incurable stages and forms of disorganization that may finally result.

that, there is not in all the literature of medicine that has met our eye, any thing clear and definite as regards any diathesis but the scorbutic; that is, any thing showing the general and conceded cause, laws, and remedies, and at the same time, that such diathesis is the initial of numerous forms and fashions of disease. This certainly favors the doctrine of the unity of disease, held by Hippocrates and Rush, as seen by the quoted mottoes on our title-page; and either paternity is too respectable to be scoffed or ridiculed. The fact that either held such doctrine, is a guarantee that it was not a trick by which to gain fame, but a conclusion arrived at inductively, from an examination of the primary diatheses, and the ultimate causes of disease. These are few. Instead of a thousand-and-one, as generally believed, and these mostly hypothetical, we have shown that there are, and of necessity can be, but only three sources or causes of general or popular diseases, viz: defective alimentation, æration, and calorification, or these combined: some fault in the *natural vital stimuli*. Our bodies are formed and repaired of what we eat and drink; a medium temperature is essential to the well working of the laboratory; and the air that surrounds us, and which we breathe, is essential to the exoneration of the waste. These constitute the necessary conditions of nutrition. Any defect in them impairs nutrition—induces a pathological condition. What pathological condition? What diathesis? Why, we have just shown that any defect of nutrition *always* induces the *scorbutic* diathesis. We have shown that starvation, partial starvation, fasting even, or any one-kind of diet, (defective alimentation,) without deterioration of the air, or extremes of temperature, will induce that condition known as the *scorbutic* taint or diathesis. We have shown, further, that unfavorable climatic conditions of the meteoric vital stimulants, (defective æration and calorification,) arising from topography, as exposure, heat, cold, humidity, and the vicissitudes incident to the changes of season, and even day and night, are adequate to begin the work of impairing the nutritive function, even under the best dietary that can be devised; but that the result is the same, the *scorbutic* diathesis. This has been clearly shown.

The scorbutic diathesis, then, is the *natural* pathological condition the system falls into, under any arrest or impairment of the function of nutrition, either from withholding the proper elements in the dietary, or from the failing of those conditions of air and temperature essential to the well-working of the laboratory. It is usually gradual in its approach, or not sudden, but the development of special forms of active disease arising from it is mostly a sudden affair. If there is great defect in all three of the vital stimulants, the progress to a marked pathological condition is brief, and vice versa: and if there is but a slight defect in one, as for instance, a slight defect in the dietary, a shade only of impaired health is the consequence. When we come to the consideration of the proper elements of nutrition, the thousand-and-one shades of impaired health will be more easily comprehended. We speak of all these conditions of more or less health, then, as so much of the scorbutic diathesis, for we have not been able to arrive at the evidences of any other *primary* pathological condition. The scorbutic diathesis, then, is the natural negative of health; or want of health; and is plainly the *primary* impairment of health, or beginning of disease. The word *scorb* in the Sclavonic language, signifies *disease*; hence the name scorbutus, (disease-utus:—hog latin,) according to Lind; see the third edition of his work on scurvy, p. 284. If this is the primary pathological condition, and the natural way in which all disease begins in man, animals, and vegetables, all organized forms of existence, the doctrine to which we are forced to yield assent, from observation, analogy, and induction, the scorbutic diathesis claims more attention than it has hitherto received. Let it be observed, then, that our definition of the scorbutic diathesis, as arising from impaired nutrition, is drawn, not to prove a pre-conceived theory to be true, but is founded on the experience and observation of the profession for three hundred years past, and is a deduction from facts well established in medicine. Definitively, then, the scorbutic diathesis is a condition of want—want of nutrition, impaired nutrition—*inanition of the blood and all the tissues*—a lack of the elements, or an obstruction in the process of nutrition. It may exist as a want in the system for

months or years, in fact does dwell in nearly every body in some degree, in the degree in which each falls short of perfect health, and is liable to be developed, at every turn or change of the seasons, or under excessive impressions, emotions, etc., into active diseases. As cold is the want of heat, and darkness the want of light, so the scorbutic diathesis is a relative condition—the want of a good state of nutritive life.

This definition of the scorbutic diathesis, we are satisfied, cannot be narrowed, curtailed, or abridged in its scope, for if it is the result of impairment of nutrition, which is the general sense, it is the *result of any* impairment of nutrition, and *all impairment* of nutrition, or obstruction of the nutritive process, which view harmonizes the testimony of all observers. Let us compare this definition given of the scorbutic diathesis with the standard definitions of disease, as a method of further illustration.

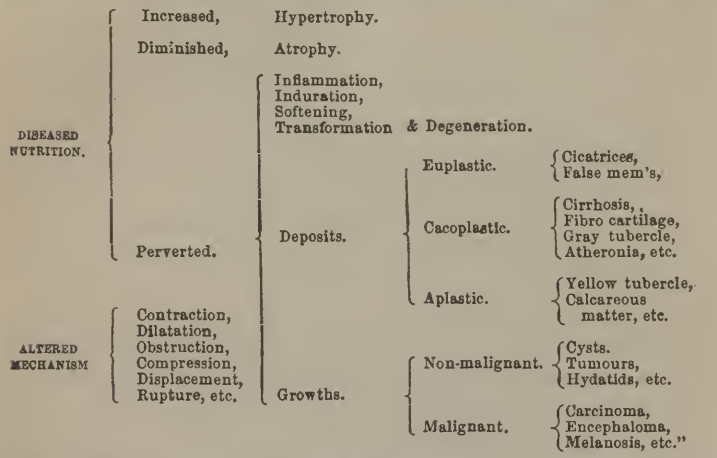
Definitions of Disease.—It is important to have correct definitions of terms, in order to convey definite ideas by their use, and as we have shown the scorbutic diathesis to be the natural pathological condition the system falls into under imperfect or impaired nutrition, and this state or condition to be *primary pathology*, it may aid the better understanding of the matter to see whether and wherein the definitions of disease differ from this. Our definition of the scorbutic diathesis will be assailed no doubt, as too general and comprehensive, by all those who hold that diseases are individual things, having idiopathic beginnings alike entitled to respect; but this is but an assumption, an hypothesis at best, however time-honored it may be, and it is our intention and purpose to discard hypotheses, and fall back on careful induction. Defect or impairment of nutrition always has and always will produce the scorbutic state, and nothing more or less, let what will or may follow this as a consequence, whether only debility or a general fever, a common cold or an inflammatory rheumatism. We shall make this clear as we proceed, and we think the definitions of disease will tend to establish it.

Dr. Dunglison's Definition of Disease is, "An opposite state to that of health, consisting in a change either in the position

and structure of parts, or in the exercise of one or more of their functions, or in both.

"By some *Disease* is applied to structural change, whilst *Disorder* is restricted to functional derangement.

"The following table, essentially that of Dr. C. J. B. Williams, comprises the chief elements of structural disease.



As this definition of disease is drawn from Dunglison's Dictionary and Williams's Pathology, it may be regarded as the definition that conveys the present sense of the profession in the matter; and what is it? verily but a syllabus of the *sequents of impaired nutrition* scholastically arranged; or "DISEASED NUTRITION," as it is set forth by bracket, but not by *diathesis*, as it should have been. The *primary dyscrasia* is jumped—and the *terminations* only presented, *called* diseases. But yet according to this definition, all diseases begin just as we hold in defective nutrition, though the teaching conveyed is, that each begins primarily and essentially *sui generis*. This is a fallacy. Take, for instance, the phlegmasiæ or inflammations: according to this definition they *all* begin in "*perverted nutrition*;" and everybody knows, and common sense teaches, that there is no specific or essential difference between inflammation of the brain, inflammation of the lungs, and inflammation of the liver. By considering the general state or starting point in this defini-

tion, which is called "*diseased*," *or* "*perverted*" *nutrition*, to be, as it is undoubtedly, a *diathesis*, then there is no difference whatever between this general dyscrasia and what we have defined to be the scorbutic diathesis. Rokitansky affirms, vol. i. p. 71, that all diseases, even the local inflammations, arise from a general dyscrasia of the blood, unfitting it for the service of nutrition, which is the same doctrine. The mind, then, should withhold its assent to the doctrine of diseases being so many independent, poisoning beginnings, for this is a fallacy: they have all a common origin, as seen by this definition, according to Williams and others, when the matter is sifted to the bottom.

Hahnemann's view.—"It is solely the morbidly affected vital principle which brings forth diseases. * * * In what manner the vital principle produces morbid indications in the system, that is, how it produces disease, is to the physician a useless question, and therefore will ever remain unanswered. Only that which is necessary for him to know of the disease, and which is fully sufficient for the purpose of cure, has the Lord of life rendered evident to his senses." (*Organon*, p. 99.)

Elsewhere Hahnemann defines disease to be a *non-entity*, and so far he is right; but everybody, both "young physic" and old, must concede that the above is very foggy. It may be said to be medical *cant*, it is certainly not medical philosophy; not that we desire to detract one iota from any new truths Hahnemann may have developed. To say the *diseased* vital principle solely produces *diseases*—and that the question *how* it is done, is useless, is to block the game and gag future inquirers. To know the *cause* and *nature* of disease, is to know the most "*necessary*" principles in the art of healing, for common sense and reason can then deduce the remedies; and "the Lord of life" should, in mercy, "render evident" to physicians the *grounds* of practice—the principles—before the theory of cure, for otherwise their reason is not available stock in the art.

Dr. Hempel's definition of Disease.—"Disease," says Hempel, "is not as is generally supposed, a state of the system opposite to health. This may seem paradoxical; and never-

theless, if disease, generally speaking, were the opposite of health, this general truth must certainly remain true in its particular applications. There must, therefore, be a quality or state of health opposite to typhus fever, another quality of health opposite to measles, another to rheumatism, another to paralysis, another to small-pox, another to dropsy, or, in one word, every form of disease must have an opposite state or quality of health. This is, evidently, not the case; hence we infer that the general principle, being false in all its particular applications, must, itself, be a fallacy, an illusion of the sensual understanding. Now then, if health and disease are neither opposite nor identical states, they must hold towards each other, relations of more or less; health, therefore, is a less degree of disease than what we generally term disease; and disease is a less degree of health than what we generally term health. In adopting this mode of reasoning, I use the terms health and disease in an absolute sense, meaning by health the perfect harmony, and by disease the perfect disharmony of the physiological functions of the organism. A man's health may be so nearly perfect, that usage has justified the expression: he enjoys perfect health; but as long as human society and this planet remain invaded by disease, we cannot, strictly speaking, say that perfect health exists in a single instance; there is more or less of it in a given case, but it is never perfect. Taking the perfect equilibrium of the functions as our standard of comparison, we may say that disease is an inferior or lesser degree of health, or health disturbed; so that, even in disease, the idea of health is still preserved; without health, disease would not be anything; whatever it is, it is with reference to health." (*Organon of Specific Homœpathy*, p. 181.)

This is a philosophic view of the subject in the main; but the position taken that disease is not an opposite state to that of health, because there cannot be counter states of qualitative health, or the opposites of the *so-called* special diseases, falls to the ground when we see that there is but one primary pathology, and this essentially *inanition*. Repletion and the best condition of nutrition imaginable is health; and the want of this, or inanition of every degree and kind is disease.

This is the philosophy of health and disease in the abstract, and at rest, and they are fairly opposite conditions. Now, as agility, skipping, and the merry laugh are among the phenomena or evidences of health, so debility, prostration, and the moan of distress, are among the phenomena or symptoms of disease. This view takes no account of the manner in which nutritive life may have become lowered and disease developed, but this we have incidentally illustrated in our previous essays, under defective alimentation, æration and calorification, or extreme impressions of the vital stimuli, and shall further illustrate when we come to treat of the elements of the human body, the elements of food, and the chemistry and action of medicines: suffice it to say here that the *condition* of the system, that which is really the disease in the abstract, is the object of a definition, and that which both the physician and surgeon should seek to comprehend.

The scorbutic diathesis, or latent scorbutus, then, is the primary, natural, or idiopathic negative of health; and it is the only natural, idiopathic pathological condition we know of. It may be, and often is hereditary, begotten; for it affects the whole system, fluids and solids, the rudiments of course; and as the parents are, so are their offspring. We say it is the first departure from health, if health previously existed, and the *only* idiopathic, or primary pathological condition we know of. If others know of any other, we shall be happy to have our knowledge increased by their showing us its origin or cause, the law of development, and rational therapeia, as we have done in regard to the scorbutic diathesis. We do not say this is impossible. We know not what others may know, or can do. We only say, if done, it will extend the boundaries of our limited knowledge. We speak of general disease or pestilence. Accidents and the toxicological effects of poisons are not, and cannot be considered natural diseases, and of course are excluded: still, slow-poisoning kills, undoubtedly, by interupting nutrition, inducing artificial scorbutus; the salts of lead and mercury are familiar examples: and moral causes of disease, such as grief, despondency, melancholy, etc., all tend one way, viz: to the impair-

ment of the nutritive function, and the inlaying of latent scorbutus. Shakspeare describes the scorbutic condition, even to the purpuric and jaundiced hue of the skin, as resulting from the moral cause, unrequited love:

> "She never told her love,
> But let concealment like a worm i' the bud,
> Feed on her damask cheek: she pined in thought;
> And, with a *green and yellow* melancholy,
> She sat like patience on a monument,
> Smiling at grief."

The scorbutic origin of diseases, then, is the only origin we hold to or know of, the only one proved, the only one on record positively shown, the only one we can work out by facts and inductive reasoning; and so we are forced to the generalization view of Eugalenus, Willis, Boerhaave, and others, because all forms of disease positively have an origin: and in this we avoid, altogether, the inconsistency they were guilty of in admitting two origins; as well as the unphilosophic credulity of all who believe in, or hold to the old orthodox doctrine of "occult qualities in the air" being the cause or origin of diseases. And so far from the science of medicine being injured by the introduction and adoption of the doctrine, this is impossible; truth never does injury, and it is absolutely the greatest truth that has ever been presented for the consideration of the profession, and must eventually become the corner-stone of the science of medicine. It cannot, therefore, do injury. The only fear is that it will be opposed, and its adoption retarded. We are aware that our positive manner of writing and asseverating the doctrine as truth, will be assailed, probably ridiculed, as well as the doctrine itself. The fear of a routinism in practice, or a stalking quackery, that was the raw-head and bloody-bones of Kramer, Sydenham, Lind, and others; the evil paramount to all others to be dreaded, were the proposition of the scorbutic pathology of diseases to be conceded, will probably be resuscitaed in ghostly awe; but this is but moonshine that will fade before the sun-light of truth. Lemon juice and the salts of potash are now taking the place of the lancet and

mercury in the treatment of rheumatism and the phlegmasiæ;* cod-oil and whiskey punch, the place of pukes, and v. s. in phthisis pulmonalis; sulphuric acid the place of calomel in cholera; and these changes in therapeutics only find their solution in the scorbutic pathology of those exceedingly grave maladies. Dr. Barnes says, "marked cases of scurvy are not, perhaps, numerous in London; but minor degrees of the scorbutic condition may be detected on careful inquiry. Patients so affected present themselves at the hospitals, complaining of various ailments, such as rheumatism, fever, gastralgia, debility, hemorrhages, dysentery, etc. *the scorbutic taint being masked* by the more prominent disease. Dr. B. regards it as certain, that if these more prominent diseases have not in all cases arisen as secondary affections upon the scorbutic degradation of the blood, yet that their nature and course are so modified by this complication, that it is necessary to take the scorbutic taint into consideration in prescribing the treatment. Good diet becomes a most indispensable point, with-

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* "*On the Treatment of Pneumonia and Pleurisy.* By Dr. NIEMEYER, Professor of Clinical Medicine in Greifswalde. (Prager Vierteljahrsschrift, 1855. Band iv. p. 121.)

Professor Niemeyer is much opposed to the employment of general venesection in pneumonia and pleurisy, and only uses it exceptionally with a view to prevent impending suffocation, and to facilitate the reflux of the blood from the brain, but not for the purpose of arresting the inflammation. He agrees with the observation of Dieck, that the convalescence is more rapid in those cases that have been treated without than those which have been treated with venesection; and he explains the fact by the increase of fibrin, and diminution in the amount of red corpuscles, induced by the venesection.

The treatment adopted by Professor Niemeyer consists in the application of compresses wrung out in cold water over the affected part of the thorax, and their renewal as often as they become warm. The great relief experienced by the patient is a sufficient guarantee that the repetition of the application will be carefully attended to. The only internal remedy employed was nitre, in doses of two drachms in the course of twenty-four hours. Although employed at different ages, and in various forms of the disease, no metastasis or other evil consequences have ever been noticed by the author. He has seen persons attacked with very tumultuous symptoms, enabled by this treatment to return to their occupation on the seventh day after seizure. Professor Niemeyer recommends an early exhibition of steel in the convalescence from the diseases under consideration." (*Brit. and For. Med. Chirurg. Rev.* July, 1856, p. 194.)

out which the ordinary medicinal agents can effect little." (*Lancet, June,* '55). In other words, Dr. Barnes finds all the diseases above mentioned, "et cetera," which we may suppose includes all the rest in London, *only* responding to anti-scorbutic treatment, all "masked," however, by *nosology*; there is no other mask we know of, that obscures the truth herein.

The same thing is greeting the experience of the physicians of the hospitals, alms houses, asylums, and jails in this country, with whom we have interchanged conversation; and the most skilful and successful in private practice are becoming homœpathists in drugging their patients, and more earnest allopathists in generously feeding them; and the whole secret of the matter finds its solution in the scorbutic pathology we hold up to view. The disciples of Thompson and Presnitz, intent on the one idea of opening the wastegates of the system, and so getting rid of the locked-in, obstructing, effete matters, or impurities of the blood, by the steaming, washing, and sweating processes, thereby provoking a demand for repletion and invigorating digestion and assimilation, but add confirmation to the soundness of our views. The method of curing dyspepsia practiced by Halsted of New York, some years ago, and which for a long time was a secret that each patient was sworn to keep, consisted in soap and water ablutions, and counter irritations by means of a heater over the abdomen until the integuments were subacutely inflamed, when the patient could eat and digest to the full; for what is dyspepsia, but a chronic inability to appropriate the elements of nutrition—in other words, the thousand-and-one wailings of the scorbutic diathesis, or want of nutrition? And the inhaling method of treating consumption practiced by Ramage and his followers, is but another phase of hygienic discipline, whereby the function of aeration is educated to a better performance, effete matters more perfectly exonerated, and digestion and assimilation invigorated; adding further proof, if any were needed, of the truth of our views, and of the scorbutic pathology of phthisis.

Illustration—Case of Consumption cured with punch and exercise:—

"Some years ago I saw a gentleman who came to town

laboring under all the symptoms of a well-marked phthisis. The disease had been of several months' standing, and the patient was a perfect picture of consumption. He had a rapid pulse, hectic, sweating, purulent expectoration, and all the usual *physical signs* of tubercular deposit, and of a cavity under the right clavicle. I may also state, that the history of the disease was in accordance, in all particulars, with this opinion. I saw this patient in consultation with a gentleman of the highest station in the profession, and we both agreed there was nothing to be done. This opinion was communicated to the patient's friends, and he was advised to return to the country. In about eighteen months afterwards, a tall and healthy-looking man, weighing at least twelve stone, entered my study, with a very comical expression of countenance:

"'You don't know me, Doctor,' he said.

"I apologized, pleading an inaptitude that belongs to me for recollecting faces.

"'I am,' he said, 'the person whom you and Dr.—— sent home to die last year. I am quite well, and I thought I would come and show myself to you.'

"I examined him with great interest, and found every sign of disease had disappeared, except that there was a slight flattening under the clavicle.

"'Tell me,' said I, 'what have you been doing?'

"'Oh!' he replied, 'I found out from the mistress what your opinion was, and I thought as I was to die, I might as well enjoy myself while I lasted, and so I just went back to my old ways.'

"'What was your old system of living?' said I.

"'Nothing particular,' he said, 'I just took what was going.'

"'Did you take wine?

"'Not a drop,' he replied, 'but I had my glass of punch as usual.'

"'Did you take more than one tumbler?'

"'Indeed I often did.

"'How many: three or four?'

"'Aye, and more than that; I seldom went to bed under seven!'

"'What was your exercise?'

"'Shooting,' he said, 'every day that I could go out.'

"'And what kind of shooting?'

"'Oh!' I would not give a farthing for any shooting but the one.'

"'What is that?'

"'Duck shooting.'

"'But you must have often wetted your feet?'

"'I was not very particular about the feet,' says he, 'for I had to stand up to my hips in the Shannon for four or five hours of a winter's day following the birds.'

"So, gentlemen, this patient spent his day standing in the river, and went to bed after drinking seven tumblers of punch every night; and if ever a man had recovered from phthisis, he had done so when I saw him on that occasion. Suppose, now, that he had been confined to an equal temperature and a regulated diet, and had been treated in all respects *secundum artem*, what would have been the result? Any of you can answer the question. In point of fact, this very treatment had been adopted during the first three months of his illness, and his recovery may be fairly attributed to the tonic and undepressing treatment which he adopted for himself, and which his system so much required, to enable him to throw off the disease."

The above case, which we cut out of a newspaper, copied from the medical journals, illustrates the efficacy of the anti-scorbutic or punch treatment, joined to an abundant inhalation in the open air, with constant exercise, etc., thus invigorating the nutritive function. The picture may be overdrawn, as to the exposure said to be daily endured, but this does not militate against the leading truth illustrated—the scorbutic pathology of phthisis.

Another case of Consumption cured—a medical gentleman. "EDENTON, N. C., February, 1830. "DR. PHYSIC, PHILADELPHIA—*Dear Sir*:—In the month of April, 1812, after having been extremely reduced by an attack of bilious fever, I was seized with a cough, which continued, with great obstinacy and severity, until the month of November, when decided symptoms of phthisis began to make their appearance.

I had every evening an exacerbation of fever, preceded by chilliness, and succeeded by copious perspiration. My cough began to be less painful, but was attended with an expectoration of mucous, mixed with pus. Before this complaint came on me, I had accepted a surgeon's commission in the army, and was stationed at Tarborough, about seventy-five miles from this place. In the month of December, the part of the regiment which had been recruited then having been ordered to Salisbury, it became my duty to repair to that place.

"Accordingly, about the middle of the month, in the situation I have described, I set out on my journey.

"In two days I reached Raleigh, without having experienced any material change in the symptoms of my complaint. During my stay in Raleigh, the disease increased every day, so that I was obliged to remain there nearly a week, at the expiration of which time I had almost determined to retrace my steps, return home, and take my station among the forlorn and despairing victims of this unrelenting malady.

"But reflecting deeply on my situation, and recollecting that scarce a patient in a thousand had been known to recover from the disease after having been confined to bed by it, I was resolved to resume my journey, and to reach the place of destination or to perish on the road. It will be impossible for me ever to forget the effort I had to make in pursuing this resolution. On a cold and blustering morning, about the 20th of December, weak and emaciated, having been literally drenched in perspiration the night before, I ascended my gig and proceeded on my journey. The first part of my ride, this day, was excessively irksome and fatiguing. Every hovel and hamlet on the road seemed to invite me to rest, and to dissuade me from the prosecution of my undertaking. Often and anxiously did I wish that my disease had been of such a nature as to allow me to indulge the inclination I felt to desist from motion. But I continued my ride for three hours, when I found it necessary to stop for a little refreshment. While dinner was preparing, I lay down on a bed to rest. It was, perhaps, an imprudent act. Never was a bed so sweet to the wayworn and exhausted traveller, as was this

to me. I lay on it for an hour, wrapped, as it were, in Elysium. When summoned to dinner, though sleep was fast stealing on me, and inviting me to be still, I arose and attended, and after having made a moderate meal of very common country food, I resumed my ride, and at night, about half after six o'clock, arrived at Hillsborough, which is distant about thirty-six miles from Raleigh. The inn to which I had been recommended, was unusually crowded, and I had to accept of a room that was out of repair, the window-sashes rattling in their casements, and the wind passing through the sashes in several places. In such a chamber, at such a season, and in the situation already described, was I quartered for the night. To my surprise, however, I had a better night's rest than I had had for several weeks, and less perspiration, and coughed less than I had done for a month before.

"In the morning, considerably refreshed, I proceeded on my journey, and travelled in a foggy, misty atmosphere full forty miles; the next day about thirty-five; and on the fourth day about twelve o'clock, I arrived at Salisbury. On my arrival, I heard it mentioned as a matter of astonishment, that a man in my situation should think of travelling in the cold and inclement season of winter; much more astonishing that I should venture to approach the mountains at such a period. But I had taken my resolution, and was determined never to relinquish it while I had power to walk or ride. The regiment to which I was attached was encamped about four miles from the town of Salisbury. To this place I tasked myself to ride twice every day, a duty I regularly performed in the coldest weather until I left the service.

"Early in January the officer in command received orders to repair with his regiment to Canada. While preparations were making for that purpose, believing that such a climate would be too severe for me, and that I must of course soon cease to be useful to the Government, I addressed a letter to the Secretary of War, soliciting permission to retire from the army. This request was promptly and kindly granted to me. In February, 1813, I commenced the practice of my profession again in this place, and continued to attend to the most laborious duties of it at all times of the day and night, in rain,

hail, snow, storms, and sunshine, whenever I was called on for eighteen months.

"At the end of that time, I had lost my hectic fever, night-sweats, purulent expectoration, and my cough had nearly left me; my chest had recovered its capacity of free and easy expansion, and the ulcers in my lungs had entirely healed. Many, who read the foregoing statement, will no doubt be curious to know what medical means were used as auxiliaries in the cure of this very alarming state of disease. It would not be in my power to satisfy curiosity on this point, were it a matter of any importance, which I conceive is not the case, *the complaint having been cured by hardy, invigorating exercise, continued without interruption in every variety of temperature and weather.*

"That palliatives of different kinds were resorted to at various periods, must at once be supposed, but I do not consider it a matter of consequence to name them, as they were generally such as would readily suggest themselves to physicians of every grade of skill or intellect, and never produced more than a temporary alleviation of symptoms. I always found that the inconvenience produced by a full meal yielded very soon to horse exercise, and that I generally coughed less while riding than at any other time. The hectic paroxysm was generally interrupted, and sometimes cut short by a hard ride, and often, very often, during the existence of my disease have I checked the exhausting flood of perspiration, and renewed my strength and spirits, by turning out of bed at midnight and riding a dozen miles or more; many a time, too, have I left my bed in the early part of the night, way-worn with coughing, restlessness, and sweating, for the purpose of visiting a patient, and after having rode an hour or two, returned home and slept quietly and refreshingly for the remainder of the night.

"Another thing which I remarked in the course of my experience in the disease was, that some of the most profitable rides I ever took were made in the coldest and most inclement weather, (air dense, and plenty of oxygen for assimilating,) and that scarcely in any situation did I return from a long and toilsome ride without receiving a sensible amendment in all

my pulmonary complaints. In short, sir, were I asked to state, in a few words, the remedy which rescued me, I should say it was a life of hardy exercise, and of unremitting toil, activity, and exposure. With pectoral medicines, or those articles or compositions denominated expectorants, I seldom meddled in my own case; without opium, which, from a constitutional peculiarity, I have not been able to take for many years, I found them too debilitating; and with it, had I been able to use the article, I should not have been disposed to take them, lest their effect in disposing to rest and inactivity might have operated against the course I had prescribed for myself, and from which I expected relief.

"It remains for me to mention another agent which, I think, excited a very curative influence upon my disease, and that is singing. In first using this remedy, it was my custom to sing in a low tone, and not long at a time, so as not to occasion much pulmonary effort. But, by degrees I became able to sing in the most elevated tones, and for hours together, allowing myself only such intervals of rest as the lungs required to obviate injurious fatigue. So long and so frequently did I repeat this act in the course of my disease, that the exercise of singing became so strongly associated, that as soon as I mounted my horse or ascended my chaise, I found myself humming a tune; and often, in my lonely rides through the country, at late and unseasonable hours of the night, have I made the woods vocal with the most exhilarating music. Singing seemed always to have the effect of clearing the bronchial passages, of opening the chest, and of giving a greater capacity of motion and expansion to the lungs.

Yours, &c., JAMES NORCOM."

There is no remedy equal to *proper* exercise, after *proper* nutrition is afforded. Combined and persevered in, they almost work miracles. Lind says of the cure of the scurvy, "There are numerous instances of a perfect recovery, without having the benefit of fresh vegetables, provided the patient is able to use due exercise." (*Treatise on the Scurvy*, 3*d ed.* *p.* 131.)

SUMMARY GLANCES, RATHER RECAPITULATORY.

The scorbutic condition is the primary pathological state.—It is apparent from what precedes, that the beginning of the scorbutic condition is the initiatory stage of all general or spontaneous diseases, or the primary pathological condition, and that its essence is a want, or fault, or an impairment of nutrition. We shall consider more fully hereafter, the subject of the elements of nutrition. Suffice it in this connection to say, that the ingesta must contain all the elements of the tissues, and especially the mineral salts of both the fluids and solids, or they are defective. For the development and repair of bone, there must be a sufficiency of lime and phosphoric acid, furnished in the food, for they can never be the products of the process of digestion; and so of all the other component elements of both solids and fluids. Physiology and organic chemistry enable us now-a-days to see clearly, to know positively, and to appreciate fully, these truths, which the old writers on scurvy were ignorant of.

The scorbutic diathesis is the predisposition to disease of all writers.—Our doctrine maintains not only the adventitious acquisition of the scorbutic taint, but the hereditary transmission of it also; that the organization or form of offspring is moulded, fashioned, or stamped with it, under the parental defects in nutritive or formative life. It is, then, the *predisposition* to disease of all writers who use this term, without heretofore having conveyed any definite or tangible idea, however, by the use of it. An alleged or accredited good state of health may exist for years with this predisposition lying latent in the system, the ordinary, natural, or exciting causes of disease not being powerful enough to develop the active epiphenomena under the habits of proper eating and drinking, proper exercise, etc., of some; while in others less fortunately circumstanced, chained to the car of poverty, or pampered in the lap of luxury and sloth, the most rapid and fatal forms of disease ensue, and consummate the law of death in the very morning of life. Still-born and live-born infant mortality are thus explained, on rational principles, heretofore a hidden problem. Phthisis, generally

developed after puberty, or in crescent manhood, under the wear and tear of sexual passions, is thus explained; and the whole round of the so-called scrofulous diseases. Our philosophy, then, goes behind the curtain that has ever heretofore hung before this morbid predisposition. Even the more apparent morbid habits, such as the leuco-phlegmatic, the dropsical, the scrofulous, the nervous, etc., that are so liable and prone to attacks of disease, are but *chronic* expressions of this latent predisposition, or a *visible* development of it. The so-called *acute* diseases springing from this root, as for example, cholera, carry off these subjects first, as a general rule, and then those with a latent, but hidden or *unseen* predisposition, or a scorbutic taint not manifest to the casual observer, and possibly bearing no objective signs on the gums, or otherwise in the tissues of the mouth. They often die suddenly, before these symptoms make their appearance, (Eugalenus.) Then follow those who by defective diet, excessive meteoric and moral impressional causes, as for instance, during the raging of an epidemic, are continually being let down in the nutritive function, until the scorbutic diathesis is inlaid. Thus the laws of epidemic as well as sporadic, of acute as well as chronic diseases, are rationally explained. The law of hereditary transmission of disease also. The law of the adventitious acquisition also. The answer to the question, then, where does the scorbutic condition begin? is quite manifest: it begins as the immediate consequence of impaired nutrition; where the proper elements are withheld from the dietary; or the organs of digestion fail to appropriate them; or the excretory function is impeded in the elimination of the debris or waste of the tissues. Neither *humoralism* nor *solidism* is maintained in our philosophy, in the sense the ultra partizans of these hackneyed doctrines obtrude them. We cannot see the relation of parents and children between the solids and fluids, or between the fluids and solids claimed; but rather both fluids and solids seem to us the children of so much beef and cabbage, to be daily *fed*, *warmed*, *aired* or *emunctoried*, or they die. Alimentation is the *parent*, warmth and air the *nurses*, and the solids and fluids a unit *offspring*; if it be sensible to personify these things; we copy the thought.

Really there is only a transfer of the solids and fluids eaten, or of the elements of nutrition, properly mixed with the digestive secretions, preparatory to their circulation and deposit where the solid tissues are disintegrated, and the debris liquified and re-absorbed for excretion. What is solid to-day, is fluid to morrow, and vice versa. The old or worn-out materials differ from the new, though still the fibrin in the road of excretion is fibrin, effete fibrin, not blastema, the lime is lime, effete lime, and so on: they have served their day, and it is God's eternal law that there must be a succession of all the elements, or a pathological condition results—*scorbutus* is the consequence.*

The first link in the morbid chain, then, is a predisposition to disease, not appreciable by our senses.—The microscope has not revealed the so-called lesions of function that are erroneously held to precede lesions of structure, (irritation of Broussais,) much less is the naked eye able to detect any alteration in the tissues. Chemical analysis has not, as yet, solved this problem, whatever we may hope from this method of investigation in future. We must, therefore, call to our aid *inductive reasoning* to prove our position, or fail, in the

*"If the reader of this paper live another complete year, his self-conscious principle will have migrated from its present tenement to another, the raw materials even, of which are not as yet put together. A portion of that body of his which is to be, will ripen in the corn of the next harvest. Another portion of his future person he will purchase, or others purchase for him, headed up in the form of certain barrels of potatoes. A third fraction is yet to be gathered in a Southern rice field. The limbs with which he is then to walk will be clad with flesh borrowed from the tenants of many stalls and pastures, now unconscious of their doom.

"The very organs of speech with which he is to talk so wisely, plead so eloquently, or preach so effectively, must first serve his humbler brethren to bleat, to bellow, and for all the varied utterances of bristled or feathered barnyard life. His bones themselves are, to a great extent, *in posse* and not *in esse*.

"A bag of phosphate of lime which he has ordered from Prof. Mapes, for his grounds, contains a large part of what is to be his next year's skeleton. And more than all this, and by far the greater part of his body is nothing, after all, but water, the main substance of his scattered members is to be looked for in the reservoir, in the running streams, at the bottom of the well, in the clouds that float over his head, or diffused among them all." (*Dr. Oliver Wendell Holmes.*)

present state of the science of medicine. Let us undertake to reason out the first link in the morbid chain, then, from facts well-attested and established.

Lind says, "Putrid gums, a stinking breath, and loosening of the teeth, [pathognomonic symptoms of scurvy,] we find also in persons who, by long fasting, are deprived of a supply of fresh chyle," all the other conditions surrounding the persons being favorable to health.

Again, "I have always observed men of the rigorous orders in the Church of Rome greatly scorbutic. They are remarkable for rotten gums, (part of which is commonly eaten away,) want of teeth, and a most offensive breath."

And again, "The same symptoms [as above given] are observable in those who are starved to death." (*Lind on Scurvy, p.* 269, 2*d ed.*)

And yet again, "I am fully confirmed in my opinion that whatever weakens the constitution, and especially the organs of digestion, [whatever arrests or impairs nutrition,] may serve, without any other cause, to introduce this disease, in a slighter or higher degree, even among such as live upon fresh vegetables, [hear,] or the most wholesome diet, [hear, hear,] and in the purest air:" [hear, hear, hear,] (Lind, iii. p. 516.) Showing conclusively that the scorbutic diathesis is the result of insufficient nutrition, the organs of digestion and assimilation being unable to appropriate it, even the most proper kind and quality in some instances, though all other conditions be right.

We have also observed the appearances spoken of in fasting orders, and have known sudden death to follow, only explicable by the law of sudden death seen in scorbutus. These data, then, are *facts* on which we may safely reason, without the possibility of fallacy; thus: insufficient food or nourishment inlays scorbutus, or the scorbutic diathesis, or as some say, a disposition to scurvy: "the children at the well-known school at Tooting were mostly disposed to scurvy from bad diet, before the cholera broke out among them" (*Barnes*). Now it is well-known that the poor children at the Tooting school in London, are "farmed out" to the lowest bidder; that all kinds of provisions were scarce and of high price at

the time of this occurrence, the raging of cholera following the Irish famine; and that the keeper was arrested and lodged in Newgate to await his trial for half-starving the poor children, and proceeded against by the coroner, Mr. Wakley, editor of the Lancet.

These data are sufficient—no sound mind at this day doubts, or should doubt the fact that, the scorbutic taint is, and may always be induced by a want of proper and sufficient food or nourishment; and as this diathesis is uniformly, and undeviatingly the result of impairment of the nutritive function, standing in the relation of the *invariable effect*, we here see cause and effect as plainly as the relation can be presented: it therefore has the force of an unerring law—it is a law in pathology. Now, although no morbid appearances are appreciable by our senses in the beginning, even aided by the microscope, is there any one who doubts that the scorbutic state has a beginning? or, that it is begun prior to any objective signs appearing in the mouth, or to any appreciable alteration, either functional derangement, or abnormity of structure? No, nobody can doubt this fact. This state, then, which we can only say from inductive reasoning, *must* and *does exist*, anteccdent to any appreciable morbid condition, is the *first link in the chain of disease*, or the *predisposing cause*, of which we have all heard so much, and never before could picture in the mind. Our philosophy, then, clears away the obfuscations in pathology, digs to the bottom and unfolds *primary pathology*, the root of all diseases; for all the *known causes* of pestilence, as we have shown, produce their effects by impairing the nutritive function; and we do not admit any hypothetical causes, such as a supposed "malaria," or epidemic influence," or "occult qualities in the air," etc.: these terms are only cloaks for our ignorance, that hinder the progress of science.

There are but three sources of general disease.—This doctrine is fully laid down in the outset of our researches on cholera, and who can gainsay it, or show it a fallacy? Proper alimentation, aeration, and calorification, are the only sources of life and health, or the only natural vital stimuli that sustain life and health, and any defect, or improper application

of them, inlays the scorbutic diathesis by impairing the nutritive function. This we have shown to be the natural consequence under the extreme impressions of either. No one can question the power of defective alimentation in the inlaying of scurvy; and as to defective air and heat, the meteoric causes, their extreme impressions, or the extreme cold air of winter, and extreme hot air of summer impair nutrition by prolonged contraction or expansion and congestion of the capillaries, thus obstructing nutrition. Nothing is plainer or surer than this in physiology; and sudden vicissitudes are the known developing or exciting causes of what are called diseases; but which are in reality but the tail-ends of disease, groups of symptoms, or rather top-symptoms, or better still, epiphenomena of the scorbutic diathesis. The inlaying of the scorbutic condition by the meteoric class of vital stimulants, hot and cold air, will be more fully maintained hereafter, as elucidated by the old authors: we have maintained the doctrine, however, in our researches, in opposition to high authority.

The causes of the Scorbutic Diathesis are the influences, one and all, that tend to impair nutritive life, but particularly defective alimentation, and especially the absence from the dietary of succulent vegetables and fruits, which elaborate the salts of the alkaline, earthy, and metallic bases, many of which are component elements of the tissues, and daily required for repairing their waste, and which are not afforded in any other aliments; hence pestilence after blights in vegetation. This view reconciles the conflicting opinions of all authors on the causes of scurvy, and admits the correctness of their observations, whether scurvy be imputed to errors in diet (defective alimentation), to cold, humidity, and other climatic or meteoric influences (defective aeration and calorification), or to moral depression. We have shown conclusively that any, and all of these causes, inlay or induce the scorbutic diathesis *necessarily*, by impairing the nutritive function. To take a narrower view of the cause of scurvy, or of its essential nature, involves the researcher, whoever he may be, in inextricable difficulties. Under this view, the testimony of all observers as to the causes of scorbutus becomes

truthful, as well as the evidence of its protean manifestations, which all are forced to admit, however gladly they would deny them, or however laboredly they may strive to compel the disease to move in straight lines.

The objective signs and pathognomonic symptoms of scurvy, are not merely, as has been erroneously inculcated, red, puffy, or tumified gums, swelled legs, and petechiæ; but the gums are pale and contracted at first, and the general health, strength, and appearance, but little changed, under what we have shown to be the primary pathological stage of the disease. The old authors expressly declare that death often ensues before the gums betray any puffiness (Eugalenus, Lind); and the writers since the Irish famine expressly state that at first the gums are *pale and contracted*, and that by-and-by appears a red or purplish line at the dental margin, resembling the lead symptom (lead scorbutus); that in a proportion of cases the gums were wholly unaffected throughout the course of the disease, especially in nursing mothers, (Shapter, Stiff, Curran.) These views are fully sustained by our personal observations, and maintained in our essays.

Symptoms do not constitute disease, neither do the objective signs nor the anatomical characters.— This is taught year after year in all the schools, is the doctrine of Rush, Broussais, and everybody else, and yet all the so-called diseases, after all said, are but so many groups of symptoms or tail-ends of disease! To prove a disease to be present in a person; or, in order to prove that there is any other disease present than scorbutus, (which we have shown to be an idiopathic condition, viz: impaired nutrition,) the *cause* of the alleged disease must be shown; the uniform and invariable *effects*; what diathesis is inlaid; what function is impaired; and what are the preventives; and what the curatives in the early stage before it becomes incurable. Again, the cause must be shown to be something besides defects in the natural vital stimuli, for these causes we have shown uniformly and invariably induce *scorbutus* by impairing nutrition: but hold, it is unnecessary to taunt the reader who rebels at our doctrine and argument, by pushing him any further to the wall, the

thing is so manifestly impossible; for he cannot show any other source or *cause* of general pestilence than we have named, the effects of which we have proved and shown to be the inlaid scorbutic diathesis. He must start a hypothesis, such as malaria, or epidemic influence, in order to get up any argument at all. The symptoms of disease, then, are only evidences of any antecedent morbid condition, the cause and nature of which are wholly unknown, except so far as scorbutus is concerned. It is but a just inference, therefore, to say that the symptoms of disease are, in all cases, but the wailings of the thousand-and-one forms of scurvy—rebellious accents against obstructions of the nutritive function; that the objective signs are more earnest appeals and warnings still; and that the anatomical characters are so many lamentations over the insufficiency of our art. Neither the symptoms, objective signs, nor anatomical characters constitute the disease, which lies anterior to all these, and is, as we have before said, a negative, a condition of want, a want of nutritive life, impaired nutrition, or obstructed nutrition—*inlaid scorbutus*. Disease, then, in its essential nature, and *primary* pathology is a unit, as Hippocrates asserts, Galen approves, Rush taught, and facts and inductive reasoning clearly substantiate.

SECTION II.

ITS PATHOLOGY ILLUSTRATED BY PRACTICAL MEDICINE AND PATHOLOGICAL ANATOMY.

What, then is to be regarded as the true pathology of the scorbutic diathesis?—However clear and satisfactory may be the received notions of the profession, with regard to the essential nature of the supposed legion of other diseases the scolasticism of medicine has inflicted science with, the pathology of scorbutus is confessedly a *terra incognita.* For three hundred years, more or less, ever since this scorbeck malady or sore-mouth epidemic of the Dutch, the schorbock or watery gripes of the Danes, broke out and spread throughout all the northern nations of Europe, supposed to be a new and before unknown disease, or more properly speaking, since the revival of letters enabled the physicians of those nations to begin to record their calamities in a medical way, has the cause and essential nature of scorbutus been a moot-point. The question has never to this day been settled; neither the question whether it was a new disease when it appeared in the middle of the sixteenth century, or an old one. These problems remain to this day unsolved; and the question of new diseases arises in these days, and all is darkness in reference to a rational solution. We hope to elucidate these matters, to set these questions at rest, and we will first show that scurvy, the scorbutic diathesis, cholera, cholera infantum, and nursing sore mouth were well described by Hippocrates, more than two thousand years ago.

Scurvy, Cholera, Cholera Infantum, and Nursing Sore Mouth, are not new forms of disease, but were well described by Hippocrates.—Whoever has read or will examine Coxe's Epitome of the writings of Hippocrates and Galen, (within the reach of all,) must be struck with the fact of the similarity of ancient and modern diseases, or groups of symptoms *called* diseases. Symptomatology was the forte of Hippocrates. He asserts the universality of this basis for prognosis. "Symptoms which in Greece are good or bad, are equally the

same in every other country." (*op. cit. p.* 86. *Book of Prognostics.*) This is undoubtedly true. The Hippocratic countenance that indicated speedy death in the acute diseases of the Grecians two-thousand years ago and more, indicates the same now, the world over. The nature of man is unchangeably the same, the vital supporters are the same, their defects the same, and the consequences of their defects the same. Hence, the rational inference is, there are no new diseases. It is unphilosophic to admit it, and sound inductive reasoning opposes it. The onus probandi rests with those who assert it. When, therefore, any writer asserts that scorbutus, or nursing sore mouth, or cholera, or cholera infantum, is a new disease, he must give us the proofs; he must show either that the nature of man has changed, or that the vital supporters, proper food, air, and heat, have changed in their influences and effects; or, that in their defects—their deficient, too-powerful, or fitful impressions—the evil consequences differ essentially; and to show this essential difference, he must unfold the *primary* pathology of all the old diseases, and of that of the asserted new one, and show the difference from beginning to end. Such an author would be a treasure, if diseases are, indeed, like the trees or plants of all zones *germinally* distinct, differing in cause and essence, and the human organism the magic soil adapted for all. No such author, however, will ever appear, the idea is preposterous, and scolasticism will continue, no doubt, to split hairs and classify the fragments, to slide over the matter of primary pathology, or latent disease, and to *call* groups of the latter symptoms, or dying phenomena of the one primary pathological state diseases—like playing the ends of games of chess. Now this was pardonable in Hippocrates, a beginner in medicine, but is not in us. Rush says, "Hippocrates was the father of nosology. He enumerated two hundred and thirty-nine general and local diseases, and describes several more to which he has not given names." (*Introductory Lectures*, p. 286.)

He says this in arguing the unity of disease and in disparagement of Hippocrates, whilst very properly, anathematising his nosology. Had Rush traced his doctrine of the unity of disease to its true source, *impaired nutrition,* instead of

locating it in the arteries, and calling it "*morbid action of the arteries*," he might with more propriety have spoken as freely as he did of Hippocrates' "errors" and "ignorance." "His writings," says Rush, "were among the first books I read in medicine; and, as a proof of my partiality for them, permit me to mention that I translated his aphorisms into English before I was twenty years of age." (*op. cit.* p. 284.) And at p. 292, he says, "Men are often relatively wise and great. Hippocrates lived at a time when 'Fame was cheap and the first comer sped?' Were he to revive, and enter upon the practice of physic with no other stock of knowledge than that he has left behind him, he would not be equal, in a combat with a violent disease, to a common nurse, who had for a number of years administered the prescriptions of modern physicians." Hippocrates did not bleed, and give ten grains of calomel and ten of jalap to everybody he met.

But we are willing to accord to each of these worthies their due; nevertheless, as Lord Bacon lived between Hippocrates and Rush, we hold that Rush should have followed the inductive method until he had put his finger on the *one cause* of his "*one fever*" and then he would have made his doctrine a living truth. But let us hear what Hippocrates said on scurvy, cholera, etc.

Hippocrates on Scurvy.—"Ulceration of the gums and fetid breath are frequent attendants on enlarged spleen. [What is this but scurvy?] When with enlarged spleen there is neither hemorrhage nor offensive breath, [showing their usual presence,] it will be found that there exist ill-conditioned ulcerations of the legs, and livid scars. [In addition to the *gum symptoms* of scurvy, here are the *leg symptoms and purpura patches.*] If, moreover, eruptions of the face, altered hoarse voice, and toothache, epistaxis may be looked for." [Hemorrhage, the great law of scorbutus, then, is the associated symptom of this pathological condition.] (*Coxe's Epitome*, p. 140—*Book of Predictions.*)

"Cleochus, after weariness and exercise, was seized with a swelling in his right knee upon the use of honey for some days, especially lower part about the tendons that are under the knee. He went about, however, though a little

lame. The calf of the leg swelled, and was hard even to the foot. His gums about his teeth were large, like grape-stones, [probably the translation should be plum-stones,] livid, black, and without pain when he did not eat. His legs were free from pain too, except when he got up; for the swelling came upon the left side [also] but was not so livid. In the swellings that were about the knees and feet, something like pus seemed to be contained; and at last he could neither stand nor go upon his heels, [could not straighten his legs: had the "angle" as this condition has been called in scurvy parlance,] but was forced to keep his bed. Sometimes he was manifestly hot; loathed his victuals; and yet was not very thirsty, nor got up to his seat [stool; in other words he was costive]. A sickness and uneasiness attended him, and sometimes he was pusillanimous. Hellebore was prescribed him, and his head was purged. His mouth was also relieved with the medicine made of the chips of frankincense, mixed with other things. [Terebinthinates are antiscorbutic]. Lentil broth was also of service to the ulcers in his mouth. The sixtieth, [two months from the attack,] the swellings subsided upon the second dose of hellebore, and only a pain affected the knees as he was laid. A humor mixed with bile [so judged from the discoloration, doubtless] fell upon his knees, and that many days before he took the hellebore." (*Ibid.* p. 432, *Seventh Book of Epidemics.*)

Remarks.—It is impossible to describe the old chronic variety of scurvy more accurately; and although the name of the disease is not mentioned, every physician who has seen epidemic scurvy, will not only recognize the portrait, but pronounce it graphic, accurate, artistic, though the style be quaint, as must be expected of cases reported twenty-two or three centuries ago, and only a translation at that.

Space will not permit us to quote the many paragraphs in Hippocrates describing scorbutic ailments like the above.

Hippocrates on Nursing Sore Mouth.—"Frequent and long-continued *lientery* coming on at all hours, both by day and night, with or without crepitus, with a discharge of crude and undigested or dark-colored matters, and unformed, of offensive smell (in other words fetid diarrhœas) are uniformly bad.

They excite thirst, but the fluid is not conveyed away by urine. *The mouth becomes ulcerated*, [Italics ours,] blotches and spots of different colors appear in the face, similar to what are called freckles, [petechiæ,] and the skin of the belly becomes rough, like dough in fermentation. The appetite entirely fails, and all exercise or work is out of the question. This disease is most severe in old age, in middle life less so; but much less so in early life." (*Ibid.* p. 137—*Book of Predictions.*)

The author is here speaking of a class of diseases, and prognosticates unfavorably of them. The fetid diarrhœa, the suppressed urine, ulcerated mouth, petechiæ, rough scurfy skin, and fatal tendency, all mark this class of diseases as nursing sore mouth; nobody can make less or more of it; no one has described the nursing sore mouth affection better in so few words; and covering as this description does, a class, or type of numerous cases, it reveals to us moderns, who have been guessing and speculating as to the nature and modern origin of nursing sore mouth, its time-honored existence in ancient Greece, and stamps it as a variety of scorbutus. Nobody but a hair-splitter can come to any other conclusion.

We could quote, did space permit or reason require, other passages or cases, where pregnancy, intermittent fever, etc., led to this chronic condition; where swooning or prolonged fainting occurred, and all the constitutional grave ailments described now-a-days in the nursing sore mouth affection.

Hippocrates on the Scorbutic Diathesis.—"Clonigus, in Abdera, who had nephritic complaints about him, pissed blood by little and little, and generally with difficulty. A dysentery was added to his other misfortune. He was ordered to drink goat's milk in the morning, with a fifth part water, so that the whole quantity should amount to a pint and a half; to eat in the morning bread thoroughly baked, and with his bread cucumber or beet. His urine was black and thin. He also ate ripe cucumbers. By this diet his dysentery stopped, his urine came away clear, and he continued the milk till the urine was come to its proper state." (*Op cit.* p. 447—*Seventh Book of Epidemics.*) Milk and succulent vegetables cured

this hemorrhagic diathesis, ergo it was the scorbutic diathesis.

"Metrodorus's son, in Cardia, had a mortification of the jaw from a pain of the teeth, and a terrible excrescence of the gums. A moderate suppuration came on, and both the grinders and the jaw fell out." (*Ibid.*)

The diathesis localized itself and a confirmed scurvy was developed.

"Aristion's servant had a mortification about the middle of her foot from the inside obliquely, without any reason for it. The bones putrefied, separated, and came away in a fistulous manner by little and little. Upon a looseness succeeding, she died." (*Op. cit.* p. 408—*Fifth Book of Epidemics.*)

"A woman in good health [so supposed] and corpulent, [the corpulent are most frequently scorbutic,] complained of pain in her belly, a colic in her bowels, and with these a swelling after drinking something upon account of conception: [probably to cause abortion.] A difficulty of breathing attended, with great uneasiness of mind and pain. [Moral causes are powerful in developing scorbutus.] She also vomited blood, but not much, and fainted away five times so as to be thought dead. Neither the pain nor the breathing were relieved by vomiting with cold water; the only thing that relieved her was pouring about thirty firkins of cold water upon her body. For after this a great deal of bile passed downwards, and she recovered; whereas when the pain was upon her nothing could pass." (*Ibid.*)

"The cobbler of Pityus, as he was sewing a sole, ran the awl above his knee into his thigh about an inch, but no blood followed, and the wound closed up: presently, however, the whole thigh swelled upon it, and the swelling reached to the groin and flank. The third day he died." (*Ibid.*)

"Another received an insignificant wound to speak of, (for it was not deep,) a little below his neck, behind, from a sharp dart; which being taken out not long after, he was drawn and distorted backwards, as in opisthotonus. His jaws were also fastened; and if anything moist was put into his mouth, and he attempted to swallow it, it returned again through the

nose. In other respects he grew worse immediately. The second day he died." (*Ibid.*)

Wounds and injuries that are slight, and run into a fatal termination, bear testimony to the presence of the scorbutic diathesis. All the above cases denote an epidemic morbid diathesis, and we know of no other primary one than the scorbutic diathesis.

"In Perinthus, a great many were consumptive in the spring, occasioned in some by an epidemic cough, in the winter; and in others by the long continuance of disorders: for thus what was doubtful before was now confirmed. Some indeed, who had been long ill, escaped a consumption, as those did who were troubled with nephritic pains; and so did some others, as the man, for instance, the cynic brought me to." (*op. cit.* p. 412—*Sixth Book of Epidemics.*)

Holding, as we do, that consumption is but a localization of scorbutus, the vernal epidemic manifestation of it in Perinthus is accounted for rationally, and the other numerous chronic "disorders" also. It is ever thus; epidemics are but violent manifestations of the exploding or collapsing scorbutic diathesis.

Hippocrates on Cholera.—"A man at Athens was taken with the cholera, (or overflowing of the gall;) [every thing was supposed colored by bile,] purged upwards and downwards; was in pain; and could not be relieved of either vomiting or purging. His speech failed him, and he could not move out of his bed. His eyes were misty and hollow. Convulsions seized him in the stomach from the intestine, and a hiccough followed. He also purged much more than he vomited. But upon drinking hellebore after the juice of lentils, and upon this the other lentil juice, in as great a quantity as he could, a vomiting ensued, which put a stop to both of his evacuations; but he grew cold. His lower parts were therefore bathed very much up to his private parts, till the upper grew warm again. He recovered upon it, and the next day drank some thin gruel." (*Coxe's Epit. of Hipp.* p. 401—*Fifth Book of Epidemics.*)

"The maid servant, that was a foreigner, [foreigners suffered then as now, it appears,] vomited a little from what

she drank, and was strangled; but purged very much downwards, and died in the night." (*Op. cit.* p. 408.)

"The man of Eubœa, upon drinking a purging potion, was purged three days, and died." (*Op. cit.* p. 408.)

"Eutychides was seized at last, with cramps in his legs, and a purging from a cholera morbus. He vomited a great deal of bile of a deep color, and very red, [doubtless bloody, serum, rather,] for three days and nights; drank something upon his vomiting; was mighty restless, and sick at his stomach; nor could he contain anything that he either drank or ate. His evacuations by urine and stool were much suppressed; soft fæces came up with the vomitings, and also made their way downwards." (*Op. cit.* p. 437—*Seventh Book of Epidemics.*)

Any physician who has practiced during an epidemic of cholera, must recognize the true Asiatic cholera in these cases, no matter whether the discharges were colored or not. We have seen colored discharges in true epidemic or Asiatic cholera, and the whole body perfectly jaundiced. The early discharges are generally of bilious color.

Hippocrates says, "the summer is most productive of cholera," that it "proceeds from eating flesh, especially swine's, with the blood in it, vetches; drinking to excess of old sweet-scented wine; insolation; from cuttle-fish, lobsters, and crabs; and from eating of herbs, especially leeks and onions. It also comes from boiled lettuce, cabbage, and the cruder docks; from desserts; sweet-meats; summer fruits, as apples, and ripe cucumbers; from milk and wine mixed; from tares and new barley meal." (*Ibid.*)

Now this is just the modern doctrine; hence fruits and vegetables are interdicted. We have shown in our essays on cholera and cholera infantum, that indulgence in any indigestible article of food may *excite* or develop the disease, either vegetables or fruits, although the long abstinence from acid fruits and succulent vegetables is unquestionably the remote cause—inlaying the scorbutic diathesis. The time will come when this distinction will be seen and acknowledged by the profession. Cholera, then, is as old as scurvy, and nursing sore mouth.

Hippocrates on Cholera Infantum.—"Hegesipolis's little boy had a gnawing pain about his navel near four months, which in time increased. He beat and twitched his belly; was troubled with heats; and wasted away, except in his bones. His feet and testicles swelled. That part of his belly was puffed up, as when a disturbance or looseness of the belly is coming on. He was also averse to food, and lived upon nothing but milk. As he drew near his end, a looseness came on, with a discharge of bloody, fetid sanies; the belly was exceedingly hot with it, and he died vomiting a little phlegmy substance.

"Plateas's boy had the suture of his head [fontanelle] very much hollowed in his last moments, and in time of health was always beating the fore-part of his head with his hand, but especially as he drew near his end, and yet the head was not in pain. In the left thigh, the parts below the groin were livid, (perhaps the day before,) and his testicles were grown slender.

"Hegetoridas's son was afflicted in the same manner, and died; but with this difference, that he had more vomitings towards the conclusion. (*Op. supra cit.* p. 434—*Seventh Book of Epidemics.*

"Euphranor's son had eruption like the bites of gnats for a little while, and the next day he grew feverish.

"Timonax's little boy, about two months old, had small eruptions on his legs, hips, loins, and lower part of his belly. The swellings were very red, and upon their subsiding, or going in again, convulsions and epileptic fits attacked him, without a fever, for many days before his death.

"Thynus's son was oppressed almost to death with hunger, in a burning fever; had a great many stools, with bile, faintings, and much sweating; grew very cold, and lost his speech a whole day and night. The cream of barley that was poured down, stayed with him. His understanding was clear, and his breath good." (*Ibid*, p. 446–8.)

These cases will strike experienced practitioners, for they give as good a portrait of the summer complaint of children, as is to be seen now-a-days. Trifling shades of difference in symptoms are always to be expected. The whole

picture is thus made true and natural. Cholera infantum of our times, stands out in basso-relievo, in the above cases.

It is plain, then, from the above quotations, that scorbutus and the latent scorbutic diathesis, were just as prevalent in the days of Hippocrates as now, and probably much more so, inasmuch as the peaceful arts of horticulture and fruit-culture engage the industrial mind much more in these latter times. The world is advanced in the science of agriculture, if not in the science of medicine, and hence there is less pestilence. Medicine has advanced too, but is nearly impotent in the great epidemics now, just as it was in the plague of Athens, in the days of Hippocrates, and other desolating visitations of pestilence. There is no rational therapæia or prophylaxis in any epidemic form of disease that can be named, even to this day! The cholera may rage, cholera infantum prevail, nursing sore mouth attack breeding and nursing women, and medicine knows not the reason why, how to prevent, or what are the rational remedies: empiricism prevails, just as it did in the time of Hippocrates, and of Galen, and as it has through all succeeding ages. And what is the explanation, why is it so? Simply because nosology started off in the lead of pathology. A cluster of symptoms was *called* a disease, without understanding the cause. Antecedents were observed to be sure, as eating boiled cabbage, or other vegetables or fruits prior to an attack of cholera; ergo the cholera was held to come of eating cabbage, etc. It generally prevails in summer, and summer heat is held to be another cause, and so it is the great exciting cause. But it occasionally rages in winter, and then medicine is nonplussed, and calls to its aid, zymosis as the only solution, as if the living body were a fermenting mass! Now, these fallacies come of copying the ancients without a searching examination. We are but copyists, not original thinkers reasoning like philosophers, loving and seeking truth and discarding error. A group of symptoms constitutes a disease; and if the phenomena are strange or unusual, the malady is a new one! How far have we advanced towards primary pathology since the days of Hippocrates? Rokitansky after examining thirty thousand cadavers, so the anonymous correspondent of the St. Louis

Journal says.) discards the microscope, and plants himself on the open sea of the humoral pathology, alongside of Hippocrates! well, we shall certainly learn something here. It is impossible to open such authors as Rokitansky and Hippocrates without being made the wiser, and it will be edifying to compare the humoral doctrines of the two; to see what Rokitansky and Hippocrates say on primary pathology; for the examination may support our view of the matter, the *scorbutic doctrine* of primary pathology.

Rokitansky on Humoral or Primary Pathology.—"Every physician is aware of the fact that Hippocrates was a humoralist, that he believed in the primary derangement of the fluids, and that the solids are secondarily altered. He also contended that nature plays a very unfortunate part in the cure of diseases by various evacuations which he termed *critical*. But I speak only of the pathology of Hippocrates, which may be thus expressed—*the fluids are primarily diseased, the solids secondarily*. Now for Rokitansky—He says, vol. i. page 271: 'Humoral pathology is a requirement of common practical sense, and it has always held a place in medical science. * * * * Of late years it has met with a new basis and support in morbid anatomy [30,000 cadavers examined by Rokitansky alone]. * * * * Not alone has morbid anatomy demonstrated the existence of blood diseases in unlooked for detail; it has at the same time solved a problem of the weightiest import. It has, we think, decided in favor of a humoral pathology, by demonstrating a primitive anomaly of blastemata—by demonstrating the endogenous impairment of blood within the vascular system in the inflammatory process as the bases of the variations in the exudates. * * * * Lastly, by demonstrating the dependence of local morbid action upon pre-existent impairment of the general circulation. Speaking of changes of the solids, the author observes, page 71, vol. i., that 'Every change of texture is found in an anomaly of general nutrition;' that the proximate causes of these changes are, alterations of the blood as the general fluid of nutrition.' Indeed, according to Rokitansky, many diseases which have been generally regarded as purely local, are in truth but the

localization of a general disease—of a dyscrasis. Thus, pneumonia, which, I confess, Humoralist and Old Fogy as I am, I had regarded as a local disease, he proves to be but a localization of the fibrinous dyscrasis. True it is, that he admits the existence of local diseases: he says, on the page above mentioned — 'quantitative anomalies of nutrition having been considered under the heads of hypertrophy and atrophy, etc.

"In a word, Rokitansky endorses the doctrines of Hippocrates. [Rokitansky would not thank this anonymous writer for the compliment.] His pathology could not be better expressed in a few words, than by saying, that he regards diseases as certain changes in the quality and quantity of the fluids, and the consequent changes of the solids. [But he does not tell in what the changes consist *essentially*—the cause of this altered quality of the blood.] In the course of his volumes, he demonstrates the utter futility of the microscope as an instrument of diagnosis between malignant and harmless growths and tumors. He says, that the same morphology characterizes both the malignant and the benign growths—a conclusion at which most pathologists had arrived. He gives a death-blow to the microscopic gentry, in these words: 'Microscopic analysis, therefore, from which important disclosures in relation to the diagnosis of benignant and malignant humors * * * * * * were expected, has in reality thrown but an uncertain light upon the subject.' Still, in the face of the greatest of modern pathologists, tyros in science pretend to diagnosticate cancer by the microscope. Rokitansky cannot do this—but they can!! Who believes them? non ego. Long life to Rokitansky—may he attain the age as well as the honors of Hippocrates!"—*Philadelphia Med. and Surg. Jour., copied from the St. Louis Med. and Surg. Jour.*

Remarks.—We find that the above quotations from Rokitansky's Manual of Pathological Anatomy, are correctly given, conveying the right sense, and we have preferred to allow the correspondent of the Journal cited, to set forth the doctrine held by this eminent cultivator of medicine, rather than give a rendering ourself, although we might, perhaps,

make the case still stronger, were it necessary, in support of our doctrine of all forms of disease springing from one source, viz.: impaired nutrition. We are satisfied to let humoral pathology, if it be "a requirement of common practical sense," support our views, whenever, wherever, however, and by whomsoever expounded: we will not quarrel with this ancient doctrine then, although we hold that the fluids and solids are a unit, and differ in nothing but the accidental circumstance of the so-called solids possessing a greater degree of solidification at a given moment, by the accretion of nutrient elements, from so much beef and cabbage, as we have before expressed it, and which only can be fitted for deposition by solution in the salivary, gastric, hepatic, pancreatic, splenic, and messenteric secretions derived from the solids, and further acted on by aeration in the lungs; which so-called solids are soon to become fluids again, by disintegration and solution, and by absorption, to be sent off by the pumps as so much bilge-water. Nutrition, it seems, can be accomplished in no other way, but by this elegant or admirable chemico-vital and mechanico-vital coöperation, which constitute, in fact, the vital processes, or life-giving and life-preserving principle, for every thing that abridges nutrition, lessens vitality. All depends on the perfection with which this function, nutrition, is performed; and when not well maintained, the negative is so much progress made in the scorbutic diathesis or primary pathology, as we hold, and as we shall more fully illustrate before we close.

Now, the dyscrases described by Rokitansky, and which he says, "depend upon qualitative anomalies of nutrition," p. 71, amount to the same thing precisely, only nobody understands what an anomaly of nutrition means when it is said. This scholastic ambiguity is the bane of medicine. Rokitansky may explore till doomsday, with scalpel and microscope, examine thirty times thirty thousand cadavers, and never approach any nearer the primary pathology of disease. It is like following the chase on the back track. He gets farther and farther from the game, the farther he traces the waning vital spark, and notes the morbid appearances; for, faulty nutrition is like an error in the outset of a mathematical

problem, who can tell what shall be the vitiation at the close? Rokitansky acknowledges that from an anatomical stand-point, we can never arrive at a knowledge of the cause of disease. We must pursue the chase by chemical analysis, from death to health, and where this fails, we must reason inductively from the facts obtained. He says, p. 272, vol. i., "Up [down] to the present day, chemistry has not taken this duly into consideration, so that as yet, this science [pathology,] cannot be said to have far exceeded the achievements of a circumspect anatomical survey, notwithstanding the limited resources at the disposal of the latter.

"Upon the chemical pathologist, we would strongly urge an unremitting prosecution of his researches. *We would recommend him to direct his labors more particularly towards ascertaining the precise character of the impairment suffered by the proximate ingredients of the blood, and of the anoma lies impressed upon its elementary composition*, [italics ours.]

"Our own task in these pages, will be limited to establish ing a purely anatomical pathology."

When we come to the consideration of the chemistry of our subject, and examine what light it has already shed in this direction, the data, from which to draw deductions, will be very much increased. For the present, suffice it to say of the anatomical method, the numerous results of disease, the products or exudates noted by Rokitansky, are no evidences whatever of so many primary pathological conditions. Nutrition may be impaired in precisely the same manner, in a thousand individuals, say, by withholding all food entirely, in order to illustrate the principle, and will any one venture to say all will die after the same manner? They would all die of scurvy, to be sure, but their symptoms would be as various as their constitutions, ages, habits, etc. "*The precise character of the impairment suffered by the proximate ingredients of the blood*," *by obstruction of the nutritive function*, is the *aim*, then, of pathology, as especially indicated by Rokitansky, which exactly coincides with our views of this matter. We have repeatedly urged that the *want* of the proximate principles and organic salts, acids, etc., of succulent vegetables, in the dietary, is the fruitful cause of the pesti-

lences that so scourge mankind, in other words, that this is "*the precise character of the impairment*," etc. Really, then, Rokitansky, as far as he goes, supports the doctrine of a one primary pathology, without saying what that primary condition is, or what are the anomalies impressed upon the elementary composition of the blood. We have no doubt but that the *want* of iron, potash, soda, sulphur, silica, phosphorus, lime, etc., elaborated in vegetable juices, lie mainly at the root of this difficult problem, of the cause and varying aspects of disease, and that organic chemistry is eventually to open up this neglected field of research much more fully, yes lucidly, ere long.

Hippocrates on Humoral or Primary Pathology.—Now, we assent to the fact that Hippocrates was a Humoralist, but we think, nevertheless, a very lame one. His humoral doctrine is, that man is composed of four elementary fluids unchangeable in their nature, viz.: blood, pituita, yellow and black bile. And his humoral pathology is as follows:

"Now the body of man contains [is composed of] blood, pituita, [mucous,] and two kinds of bile—yellow and black and his nature is such that it is through them that he enjoys health, or suffers from disease. He enjoys the former when each is in due proportion of quantity and force, but especially when properly commingled. Disease takes place if either is in excess or deficient, or if not duly united. For when separate, not only the part in which there is a deficiency must be affected, but the part to which it goes being surcharged, will experience pain and uneasiness. When more than a mere superfluity is discharged from the system, the void occasioned thereby is productive of pain; but if this void is caused by the separation of the humors in one part, and being carried by metastasis to another, the pain is two-fold, viz.: that induced by the vacuity of the part it leaves, and the repletion of that to which it is conveyed." (*Coxe's Epitome* p. 150—*Book, On the Nature of Man.*)

Hippocrates and Rokitansky, both humoralists most assuredly, but by the advance of science we see that Rokitansky stands immeasurably in advance of his ancient brother, though still *he* is in fault, for he has not accounted for or

explained the why and wherefore of the *first link* in his morbid derangements or dyscrasias of the fluids, by which they are unfitted for nutrition. Hippocrates believed the tissues were composed of his four supposed elementary fluids, and that if either was deficient, or abounded to excess, disease set in. Now here is virtually the doctrine of impaired *nutrition.* So far there is a parallel between Hippocrates and Rokitansky. But physiology and chemistry have enabled the latter to know that the blood is "the fluid of general nutrition," and that mucous and bile, whether yellow or black, are but products, not formative elements; not blastema; that the tissues are formed and repaired from the blood; and that diseases result from the blood being *somehow, but this somehow not explained,* unfitted for nutrition.

We cannot, then, shout hallelujahs of praise to either Hippocrates or Rokitansky, simply because they are of the school of the "Humoral Pathology." We think the time is coming when pathology, all general pathology will be regarded as springing from *inanition of the blood*, if we may so express ourself, or what is tantamount to it, impaired, arrested, or obstructed nutrition; for, if a person be drowned, he literally dies from this cause, a complete arrest of the casting off of the waste—he dies, as has been quaintly said, poisoned by his own blood; and so he does in yellow fever, plague, and other so-called *malignant* or rapidly fatal diseases. The evil is slow and insidious as a general rule, latent, cumulative and unseen; but under an exciting cause becomes collapsing, visible, rapid, and terrific. Doubtless this is the primary pathology of all general disease — a want of the elements in the blood, of which the tissues are made and repaired, and especially the salts and basic elements; or a back current of effete matters which the capillaries, debilitated by excessive heat or cold, etc., could not eliminate, and which is so much dead and dissolved flesh or tissue, and possibly putrid, for the nitrogenous compounds are prone to rapid putrefaction under heat and moisture, and these effete matters, if not eliminated, are subjected to a temperature of 98° F., and are forced to go the rounds of the circulation, nolens volens! no wonder people sicken and die. The fault, however, is not

alone in the fluids. The humoral pathology only gives the key to half of the difficulty. The solids are in precisely the same condition as the blood, and cannot secrete healthy fluids. All the juices concerned in digestion, then, are as so much bilge-water in the process; and he is a happy practitioner who opens the waste-gates, and clears the way with acids, etc., for a better condition of nutrition.

Rokitansky's quoted pathology of pneumonia, will apply to all the phlegmasiæ,—the fibrinous deposits only show the scorbutic excess of fibrin in the blood, the "fibrinous dyscrasia," or the "croupous dyscrasia," or low-lived fibrin, quarrelling for elimination, at the weakest point, modified by the character of the secreting surface. If the *sthenic* forms of disease are but the localization of a general dyscrasia of the blood, our new doctrine has nothing to contend with in the *asthenic* forms of disease, certainly—all is scorbutic pathology without an argument.

SECTION III.

ITS PATHOLOGY ILLUSTRATED BY CHEMISTRY, PHYSIOLOGY, AND THERAPEUTICS.

As a starting point in our researches under this head, the broad practical fact that, the alkaline, earthy and mineral bases, the mineral and vegetable acids, and the numerous salts formed by the union of these bases and acids, are generally more or less, possessed of antiscorbutic virtues, affords an idea that may justly be considered a leading one. Why is this the case? We shall endeavor to explain this matter in this section, and here we shall be under the greatest obligations to chemistry. We have made allusion over and over again in our essays, to this great fact, and have reasoned from it in supporting our conclusions as to the scorbutic nature of cholera, cholera infantum, and nursing sore mouth, the testimonials to this fact being furnished by other writers. The British hospitals, for instance, furnish the testimonials as to

the value of the saline treatment and acids in cholera; allo pathic and homœopathic therapeutics abound with testimonials of the great efficacy of the acid treatment in cholera infantum; and throughout the contributions to the nursing sore mouth, as epitomised in our essay, the value of the salts of potash, soda, iron, and lemon acid are testified to by numerous writers.

We have alluded in our cholera infantum essay, p. 127, to the view of Dr. Garrod of London, that the want of the salts of potash in the blood is the cause of scurvy, and that all vegetables and fruits containing the potash salts are our best remedies. In the proper place, we shall discuss this matter fully, and show by the chemistry of man and the chemistry of his food, the relation of all the nutrient salts to his blood and tissues, and show the reason why vegetables and fruits, which elaborate those salts are all antiscorbutic.

By the best writers on therapeutics we are told that, the long-continued adminstration of an acid or an alkali induces scurvy. We have no doubt of the fact. An undue amount of either forced upon the digestive apparatus, would impair the nutritive function, and induce the scorbutic diathesis. And a return to a proper and necessary use would be attended by the recovery of the patient. Whether such cure would be homœopathically or allopathically wrought we leave for medical theorists to decide. Our mission lies with facts more than with theories, and without running into abstractions we hope to explain the reason why potatoes and turnips, grapes, oranges, salads, rhubarbs, strawberries, etc., so delight our gustatory sense, and why the salts with which they abound are therapeutically so efficacious.

Illustrations from Therapeutics.—The views maintained by us that the scorbutic diathesis is primary pathology, and the essential difficulty a want of the organic salts or the mineral elements, have received marked confirmation in our mind of late, by witnessing a prescription made in the private practice of one of the leading medical worthies of Philadelphia.* The patient was a medical gentleman from abroad

* *Dr. Jackson's Prescription.*—Compound Syrup of Phosphates, or chemical food composed of the phospates of lime, soda, potassa and iron. This

laboring under anæmia, general debility and palpitation of the heart to such a degree as to impress him with the idea of an organic affection. The prescription was the compound syrup of the phosphate of lime; a neat pharmaceutical preparation, holding in solution, as the professor explained, most, if not all, the mineral ingredients or organic elements of the tissues, lime, soda, potash, iron, phosphorus, etc. The great efficacy of this prescription in like chronic cases was dwelt upon by the professor, much to our edification. But the reason of its efficacy must be obvious to those who have attentively read our essays. We have over and over again elucidated this matter by showing that these organic principles, these bases, salts and acids from the mineral kingdom, so necessary to human health, were *only* elaborated in vegetables and fruits, hence their chief efficacy in scurvy.

Now, we have for some few years past, since we have understood better the scorbutic pathology of all these chronic ailments, been in the habit of prescribing on similar principles, by compounding an electuary of the many minerals that seem to play the part of a hydraulic cement, in our material fabrics. Disregarding the doctrine of incompatibles, we have ordered the carbonates, phosphates, tartrates, citrates, etc., of lime, soda, potash, and iron, to be formed into an electuary with simple syrup, together with a little powdered ginger, and a few drops of Tr. Bals. Tolu. a teaspoonful of this to be taken three times a day, as a mineral nutrient; thus supplying

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preparation was introduced by Professor Jackson, of the University of Pennsylvania, and has been extensively prescribed with very gratifying results.

It is not intended as a popular remedy, but is respectfully submitted to the Medical Faculty, as a nutritive Tonic, well suited to supply the waste of elementary matter in the human system during the progress of chronic cases, particularly Dyspepsia, and in Consumption.

By careful and intelligent manipulation, the salts are all held in complete solution, hence their efficiency in a small dose. This preparation is pleasant to the eye, agreeable to the taste, and grateful to the stomach, and does not nauseate by protracted use.

Directions.—A teaspoonful to be taken three times a day or less, as the Physician may direct. It should be taken immediately after eating, so as to become assimilated with the food.—*(A Philadelphia Apothecary.)*

the impoverished laboratory, with the main mineral components of the tissues, and trusting the matter to nature, to work in the raw materials to meet the wants of the case: at the same time giving wine and quinine, and enjoining a free use of acids, and a large proportion of succulent vegetable food and fruits in the daily dietary. This course persisted in, rarely fails in the chronic ailments under consideration, and we have used it in obstinate skin diseases, with the happiest results.

We are not fully prepared to say which formula is the more judicious one; though it cannot be denied that if the prescription of the learned professor can be so compounded as to hold all the mineral organic elements of the system in solution, it would seem to claim the preference, because more readily absorbable. Nor is such a prescription incompatible, though reactions ensue before absorption takes place. In the present state of our knowledge, we are ignorant of many of the laws of vital chemistry, and cannot say in every, if in any case of dilapidated health, which mineral element is most needed, whether iron, potash, lime, or some other; so that the best we can do, is to offer all of them, and let nature make the selection of those most essential, which she will be very apt to do, and suffer the rest harmlessly to pass. We understand this distinguished practitioner, is slightly, if not more, regarded by others as riding a hobby; but with the key of explanation, which our philosophy opens, it appears he is on the true horse, however constantly he may ride it. But let it not for a moment be inferred that we consider this as covering the whole art of prescribing. It only opens one rational method—that of speedily supplying the lost elements. It may be quite as important a matter to eliminate the obstructing, worn out, or effete elements or detritus of the tissues, and of the food already in the road of excretion; or still more important to decide what remedy or pharmaceutical combination of remedies may be instantly demanded to meet an exigency threatening the immediate extinction of life, from the products of disease, or the exudates, as fibrin in the trachea, or water in the thorax. Our opulent pharmacopæia may not be too copious, if we could as rationally apply each

remedy as we can supply the lost mineral elements of the tissues to the blood.

As evidence that the prescription of the professor is a rational and philosophic one, we quote a newspaper paragraph, showing that these facts or truths in the science of organic chemistry are already popularized and accepted by the world, whatever may be the opinions of the profession in the matter. The popular sense, which is doubtless justifiable, is, that inasmuch as these minerals abound in the human system, in its normal or physiological condition, they are absolutely necessary—they are component ingredients of the tissues, and of course are indispensable.

"*Minerals we Eat.*—'All know,' says the Portland Transcript, 'that many men have a great deal of brass in their composition, but perhaps all are not aware of the variety of minerals that enter into and form a part of the human system. A writer in Dickens' Household Words thus tells the story:—

"'These minerals, which are interwoven with the living structure of the plant, are taken up into the fabric of the animal. And to us they are as important as to the meanest vegetable that grows. I, who write this, boast myself living flesh and blood. But lime strengthens my bones; iron flows in my blood; flint bristles in my hair; sulphur and phosphorus quiver in my flesh. In the human frame the rock moves, the metal flows, and the materials of the earth, snatched by the divine power of vitality from the realms of inertia, live and move and form part of a soul-tenanted frame. In the very secret chamber of the brain there lies a gland, gritty with earthy mineral matter, which Descartes did not scruple, with a crude scientific impiety, to assign as the residence of the soul. You could no more have lived, and grown, and flourished without iron, and silica, and potash, and sodium, and magnesium, than wheat could flourish without phosphorus, grass without silica, cress without iodine, or clover without lime. We are all of us, indeed, of the earth, earthy.'"

Illustrations from the Physiology and Chemistry of Man.—The ultimate elements of the human body, over and above these mineral components, are, carbonic gas, oxygen gas,

hydrogen gas, and nitrogen gas, into which the animal fabric is finally resolved by spontaneous decomposition. The mineral elements only remain constituting the ashes. Let us examine the subject more technically.

Dr. Goddard's Synopsis of the Elements of the Human Body.—Whoever will consult the fourth American edition of Wilson's Anatomy, edited by Dr. Paul Beck Goddard, will find a lucid synopsis of the ultimate as well as proximate elements of the human body, placed as a prefix, and surely we cannot elucidate our doctrines of scorbutic primary pathology in a more forcible manner than to copy his arrangement of the ultimate elements of the tissues, embracing these minerals and their salts, upon which we have harped so much and oft, and regarded as playing an all-important part in nutritive life; the want of which, in the blood and tissues, constituting according to our view, the very essence of the scorbutic diathesis, or pathology of scorbutus. This view is not only founded in common sense, but gives the key to all the phenomena; to Prof. Jackson's success with his compound syrup of the phosphate of lime; to the efficacy of our treatment by minerals and acids also; and to the utility of succulent vegetable food. It explains Dr. Garrod's view of the pathology of scurvy also, viz.; that it depends on a want of the salts of potash in the blood. His views, as far as they go, are undoubtedly right; but soda, and iron, and lime, are as much needed in the nutrition or repair of the tissues surely as potash, so that his view is too limited, as will be apparent on an examination of the number of these mineral elements in the human system. Chemistry is the ark of safety in pathological science.

"*The principal ultimate elements of an animal body obtained by the processes of chemical analysis, are*—Oxygen, hydrogen, carbon, and nitrogen, which form almost the whole bulk of the fluids and soft solids; but to these must be added a number of others, which, although they exist in smaller proportions, still form important constituents of peculiar tissues. Thus we find—

Lime, or its base, *calcium*, combined with the carbonic or phosphoric acids, in the bones and teeth.

Magnesia, in the sebaceous matter of the skin.

Alumina, in the enamel of the teeth; and

Iron, in the black pigment in various parts.

The additional elements thus brought into the organism may be enumerated as follows:

Metallic bases of Earths.—Calcium, magnesium, silicium, aluminum.

Metallic bases of Alkalies.—Potassium, sodium.

Phosphorus, sulphur, chlorine, and fluorine.

Metals.—Iron, manganese, titanium, arsenic, and copper.

Almost all of these elements exist compounded in either the binary or ternary form.

The binary compounds are—

Water, found universally consisting of HO.

Carbonic Acid, found in blood, urine, sweat.

Carbonates, or *salts of carbonic acid:*

Carbonate of soda, in serum, bile, mucous, sweat, saliva, tears, cartilage, etc.

Carbonate of ammonia, in the amniotic liquor, probably derived from the urine of the fœtus.

Carbonate of lime, in cartilage, bone, and the teeth.

Carbonate of magnesia, in the sebaceous matter of the skin.

Salts of phosphoric acid:

Phosphate of soda, in serum, saliva, sweat, bones, muscles, etc.

Phosphate of lime, in bones, teeth, cartilage, and the sandy concretions of the pineal gland.

Phosphate of soda and ammonia, in urine and blood; but probably only for the purpose of being excreted or thrown off as unfit to constitute a part of an animal body.

Phosphate of iron, in blood, gastric juice, and urine.

Chlorine and its compounds:

Hydrochloric acid, in gastric juice, and in the fluid of the cæcum.

Chloride of Sodium, in blood, brain, muscle, bone, cartilage, dentine, and pigment.

Chloride of potassium, in blood, gastric juice, milk, saliva.

Chloride of ammonium, in sweat, gastric juice.

Chloride of calcium, in gastric juice.

Sulphuric acid and its compounds :
Sulphate of potassa, in urine, gastric juice, and cartilage.
Sulphate of soda, in sweat, bile, and cartilage.
Sulphate of lime, in bile, hair, and cuticle.
Sulpho-cyandide of potassa, in the enamel.
Silica and oxide of manganese, in the hair.
Alumina, in the enamel.

Oxide of iron, in blood, black pigment, lens, and hair.
Oxide of titanium, in the capsulæ renales.

"*Ammonia and cyanogen* only exist in excreted liquids, and consequently do not appear fit to form any part of an organism, one consisting of NH, and the other of CH; their elements may only have united for the purpose of finding a ready exit from the body through the emunctories.

" Chemistry and physiology have both failed to detect the mode in which the elements of an animal body form themselves into the ternary and quaternary compounds which are found or supposed to exist in them, and much confusion and uncertainty still prevail in regard to their composition and the part they play in the animal organization. Almost all of these compounds contain nitrogen, in addition to the carbon, oxygen, and hydrogen found in them; and some of them are exactly alike in their elementary chemical constitution, although differing in a remarkable manner in their sensible characteristics. Those ternary or quaternary compounds which contain nitrogen are prone to rapid putrescence, and have received the generic name of *nitrogenized* substances." (*Goddard's Ed. of Wilson's Anatomy.*)

An attentive consideration of this subject, based on a knowledge of anatomy, physiology, and chemistry, ought to satisfy readers that a diet of meat and bread mainly; or of tea and toast; or a farinaceous diet so everlastingly preached by the profession to patients; or any one kind of diet: or even the the routine dietary of the hospitals; or the pork and beans dietary of the army; or the salted meat and hard bread rations of sailors; or the garbage-quality dietary of all the lower classes in cities, especially after blights in vegetation and under high prices of provisions, can never maintain the

healthful integrity of the body; can never afford the *materials* for repairing the waste of grown up bodies, nor the solid minerals children so much more need in building up their young and growing fabrics. Here comes the application of our doctrines maintained throughout the preceding essays, viz.: that cholera, cholera infantum, and nursing sore mouth, are but forms of scorbutic dilapidation, owing to defective alimentation, mainly. This is the fundamental mischief, and here are the proofs. Any mind that can reason at all, can see the truthfulness of our deductions. An animal cannot be built without lime, potash, soda, iron, phosphorus, sulphur, magnesia, alum, manganese, chlorine, silica, titanium, fluorine, oxygen, carbon, hydrogen, and nitrogen, and some other elements enumerated by Dr. Goddard, which we had supposed formed no part of the tissues, viz.: copper and arsenic. And if the animal fabric cannot *grow up* and be formed without these materials being furnished in the aliments, and beautifully distributed by the chemico-vital process of digestion and assimilation, surely it cannot be *repaired* without them. They cannot be manufactured in the stomach, or blood—they are never the products of the processes of digestion and assimilation. There is no nutrition in food but the elements of which the tissues are composed. Without a sufficient supply of all those elements in the ingesta, then, nutrition cannot go on properly, and no one, two, three, or four articles of food and drink in use in any part of the world contain all these necessary elements of nutrition. Hence the poor, every where, who cannot obtain variety and good qualities of food, perish under all forms of disease, begun in a want of the elements of nutrition. These elements, too, are mostly furnished in vegetable food; hence after blights we have sickness, raging epidemics as we have shown and illustrated by coincidences. All these elements of nutrition, the metallic, earthy, or alkaline bases, as well as the acids, chlorine, and other elementary principles, that like acids form compounds with them, are *only* elaborated, as we have repeated over and over again, in vegetables and fruits. Hence the efficacy of vegetable food and fruits in scurvy. Chemistry has established these data. We have only to arrange the facts. The deductions are as plain, irre-

sistible and incontrovertible as that two and two are four. Animals take up none of these salts from the earth; they only obtain them, or chiefly obtain them from vegetable food. Animal food, therefore, is not so healthful for human beings as vegetable food, because it does not contain these elements of nutrition in that variety, quantity and quality best adapted to man's nature. Carnivorous animals can sustain life and health, mainly, on animal food, as reptiles can live with less oxygen than man, but they prefer to feed on the herbivorous classes, the blood of which is a vegetable emulsion, rich in the mineral salts; some prey only to suck the blood; and animals instinctively resort to eating grass and herbage when sick. A dog gnaws a bone for the lime it yields as well as the carbon of the marrow. The deer seeks the salt-lick for the soda and chlorine the water contains. These instincts can never lie. They speak to minds capable of reading these pantomime illustrations, the eternal truths and beauties of God's laws. Now apply what we have before said to this elucidation, viz.: that, the want of the elements of nutrition in the daily dietary is the geatest source or cause of scurvy, and our views will be intelligible, and, we think incontrovertible. It is clear, then, that a one-kind of diet, as we have expresssed it, inlays the scorbutic diathesis, if it be a proper expression to say a want is inlaid; for the scorbutic diathesis is now seen to be a want of these elements, or some one or more of them. If a person goes without food for a day he has hunger—he inlays hunger. He is weary, faint, and has a gnawing, painful sensation in the stomach. Suppose he were to live a month on food containing no lime or phosphorus. Is any one bold enough to dare to say he would not have pains in his bones, complain of weariness, perhaps begin to look pale and evince the objective signs of scurvy? No, no medical philosopher should expect anything less. There is a terrible want inlaid, and the man feels it in his very bones. This, then is an illustration of one way and manner, in which a pathological condition can be seen by the mental vision, known, proved, and appreciated, before dissections and the microscope can possibly reveal it. This condition is primary pathology. And is this a functional or an organic disease? plainly the

latter. The *want* is the disease, the want of lime in the bones. The functional disturbances or the morbid actions, are the effects. Disease is the condition not the consequences. Dr. Rush made a mistake when he maintained that fever consisted in morbid action of the arteries. Doubtless a man living without lime and phosphorus in his ingesta for a month, would have a fever, and it might chance be an ague, a typhus, a yellow, a scarlet, possibly a *puerperal* fever—anything the nosological doctor might scholastically diagnose it, or see fit to call it—but the disease would be the condition giving rise to the morbid actions of the arteries and all the other organs, as proved by the vitiated secretions and exudates. But not to extend our remarks further than to illustrate our views clearly, we say this want of the elements in the ingesta for the growth and repair of the tissues constitutes one mode in which nutritive life is impaired. This is one way in which the scorbutic diathesis is induced. It is the direct and most usual way, and illustrates what we mean by *defective alimentation.*

But again, a man may have all the elements afforded in his dietary, and yet breathe so foul an air, perhaps by sleeping in the hold of a ship, or other confined apartment, crowded in with masses of human beings, the air becoming deteriorated by carbonic acid, so that the carbon and effete matters cannot be carried off from the blood properly by the lungs, and a want of elimination is the condition. The want of having some portion of the old elements and debris of the tissues—the smoke and ashes—duly exonerated, or rapidly whisked off at every breath, impedes the deposit of new particles, and nutrition is again impaired, and the scorbutic condition is the consequence. It is as much a part of the function of nutrition to keep the track clear of the waste as to eat and drink, or take in a new supply. It may be a mistake in supposing that an animal dies from being "poisoned by his own blood" in such a hurry, when respiration is suspended. The real cause of death may be, and is, probably, *obstruction* to this gaseous waste-gate of nutrition. Carbonic acid accumulates so rapidly in the blood from the combustion necessary to the maintenance of animal heat, that an escape pipe becomes an

indispensable arrangement, and this must be kept open, or the flues of life will collapse. The laboratory of nutrition must needs be warmed. Every apparatus is subservient to the end of nutrition. Here, then, is another way by which nutritive life is lowered, and the scorbutic condition induced. This is what we mean by *defective aeration.* Now the infectious effluvias from the exudates of the human body under disease, probably operate on this principle. They probably only derange the laboratory of nutrition, as the laboratory which threw them off was deranged, and like consequences ensue. This derangement may consist in but a slight change of the conditions under which the elements combine for excretion, as the elements of ammonia, cyanogen, urea, uric acid, and even fibrin. The conditions must be right for the success of delicate chemical tests. If an obstruction, though slight in the beginning, prevents the combining of elements in due form for excretion, and they "are prone to rapid putrescence," the case becomes worse and worse, during what is called the incubation of the disease, till finally collapse ensues—some terrible explosion. We say this *may be* the law; we think it is; it looks more rational than zymosis. But chemistry and physiology leave us still in the dark, as regards the ultimate facts of nutrition. Our position, however, is doubtless tenable, that defective nutrition may result as a consequence of impurities in the air; and any impairment of nutrition is so much scorbutus.

And once more, a man may have good food and good air, and still be so badly warmed, either pinched by winter's cold, or congested by summer's heat, as to fall into the scorbutic condition from impairment of the nutritive function, by obstruction of the circulation in the capillaries, and this is what we mean by *defective calorification.* We must be furnished with all the elements of the tissues in our food and drink, and rightly aired and warmed, conditions requisite for the perfect performance of the nutritive function, and buoyant health is the result. Any defects in these natural vital stimuli impair nutrition, and primary pathology, or the latent scorbutic diathesis is the consequence. Each of these heads is a text sufficient for an elaborate work, but a word to the wise is

sufficient. We must be brief and hurry on to further illustrations of our doctrine: and it behooves us in the next place to unfold the source of these minerals found in the tissues of man; from whence he derives them.

Illustrations from the Chemistry of Plants and of Vegetable food.—Plants, it appears, according to Davy, Liebig, Pelouse, and others, derive their food from the atmosphere, from materials floating in it, and from the dissolved mineral bases, salts, etc., contained in soils. They excrete both organic and inorganic matters by their rootlets, as well as imbibe these soluble materials. What one plant thus excretes, is food for another; hence the rationale of a rotation of crops, the foundation of the science of agriculture. Analysis reveals that the ashes of different plants, and of different parts, even of the same plants, yield not only different proportions of the same salts, but different salts in large quantity—for instance: the tuber of the turnip yields a very large per cent. of potash salts, and the tops or leaves only a small per cent. of the same; while the potato tuber yields a much larger per cent. of potash salts than the turnip, and the tops a very large per cent. of *lime* salts. The tubers of an acre of potatos, average yield, are said to take up two hundred and fifty pounds or more of potash salts, while the tops will not take from the soil, over fifty pounds of the same salts, but a much larger proportion of the salts of lime. The seed of wheat, a type of all the graminæ, contains in an average yield per acre, some twenty pounds of phosphoric acid, while a trace only is found in the culms, the salts of potash and lime giving the culms their necessary strength and beautiful polish: hence the value of guano, and other manures, containing azote in abundance, in the culture of wheat in order to obtain a good berry, and the reason why the liming of old exhausted soils produces a fine growth of stalk. The pomaceous fruits, grapes, and berries, all require a soil strong in the salts of potash and lime, for these salts not only enter very largely into these fruits, but the boles of trees it is well known, yield the pot-ashes of commerce. Plants are governed in their habitudes by the kind of salts that exist in soils; and plants having a natural fondness for one class of salts, not finding it in a soil,

will appropriate other kindred salts. Thus soda has been found to replace potash in the oak on the sea coast, and the salsolas or sea-weed, yielding the soda ash of commerce, transplanted to the interior of a country will appropriate the salts of potash. Grapes grown on the sea-coast contain tartrate of soda instead of tartrate of potash, etc.

These facts sustain our argument; a physiological condition cannot be maintained without a continued supply of all the salts that are assimilated and found in the fluids or solids of the system. The bones must have lime, the muscles potash, the blood iron, the brain phosphorus, etc., etc., and the office of the vegetable kingdom is to elaborate all the salts of all the bases necessary to this purpose and beautiful harmony in nature. We can obtain the carbon, hydrogen, oxygen, and nitrogen from animal food and vegetables not abounding in the acids and salts of the bases, but the latter from vegetable food only. Under the constitution of man's omnivorous nature, then, he cannot get on well without fulfilling to the letter the law requiring him to devour all the succulent fruits of the earth, and thereby taking in all the salts, acids, alkalies, earths, and minerals, necessary to a perfect physiological state. The chemical reactions that take place, and that seem to constitute a part of the secret operations of nature in the vital laboratory of man's system, are yet but faintly understood, though we know there are chemico-vital processes in constant play. The citrates, and tartrates, and carbonates, etc., are converted into phosphates, sulphates, and muriates, etc.; and by this manner of reasoning, we can measurably understand the antiscorbutic value of citric acid, or tartaric acid, or of any and all of the weaker acids and their neutral salts, and comprehend why potatos, and turnips, and apples, and peaches, etc., are such wholesome articles of food, and such excellent preventives against scurvy.

The circle of the play of matter is not inappropriately introduced in this place—the transformation of mineral or lustrated matter into vegetable organized matter, the consumption of this by animals, and its restoration again to the inorganic kingdom.

"A VEGETABLE is an apparatus of reduction—is fixed—reduces carbon, hydrogen, ammonia—fixes carbonic acid, water, ammonia, salts, azote—produces oxygen, azotized, fatty, and amylaceous compounds, sugar, gum, etc.—absorbs heat, light, electricity—derives its elements from the air and earth—transforms inorganic into organic matter.



"An ANIMAL is an apparatus of combustion—is locomotive—burns carbon, hydrogen, ammonia—excretes carbonic acid, water, salts, azote—consumes oxygen, azotized, fatty, amylaceous and saccharine matter, gum, etc.—produces heat, electricity—restores the elements to the air and earth—transforms organic into inorganic matter."

(*MS. Lecture of Dr. Armor.*)

This illustration makes it appear that the elements composing the inorganic world are circulating from the realms of inertia, through vegetable to animal organizations, thence to the realms of inertia again, to repeat over and over the same perpetual round.

There is more in this illustration than appears. The sixty odd inorganic elements are all contained in soils, the debris of rocks. In plants and animals they have become *living* oxygen, hydrogen, nitrogen, chlorine, carbon, lime, potash, sulphur, phosphorus, soda, iron, silex, and so on through the whole list; no one plant or animal contains all, but all are probably contained in the vegetable kingdom, the aggregate being neces sary to all the species of animals. First scrub vegetation appeared on the pristine soils, and by decaying and returning to the soil a new impress or capability of growing a higher order of plants was thus given: for every time the primaries thus become *living compounds*, the elements make progress in refinement; a progress, however, not appreciable by chemistry, inasmuch as the lime from a potato or a bone is isomeric with lime from a rock, and so on. The proofs of progress made, however, lie in the superior efficacy of vegetable and animal manures over minerals, and the fact that the inorganic elements re not alimentary for animals, while in vegetables, though they contain nothing new, they are alimentary. Thus, soils and vegetables are forever progressing: and animals, also, by feeding on progressed vegetation. This is consonant with all the facts of tillage and stock-breeding, the statistics of human health and life. The most progressed constitutions cannot be maintained in health on inferior qualities of animal and vegetable food. The sovereign would become scorbutic on a dietary that would recover the serf from it. Therapeutics will finally claim that its remedies shall all come from the organized kingdoms of nature.

Illustrations, from Hemato-pathology.—*M. Andral's Analysis of the blood in Scurvy.*—In 1847, M. Andral examined the blood of a scorbutic patient at La Charité, coincident with analyses being made by MM. Becquerel and Rodier on scorbutic blood; all of which examinations coincide with investigations previously made by Mr. Busk, with respect to the quantity of fibrin in the blood. The doctrine had previously been held that the blood in scurvy was defibrinated, and dissolved as it were, thus accounting for the passive hemorrhages in scurvy. But it is shown by these recent analyses that the proportion of fibrin in the blood is maintained in scurvy and sometimes increased.

"The fact," says M. Andral, "which I have reported, and which is confirmative of the cases recently communicated to the academy by MM. Becquerel and Rodier, demonstrates that the symptoms which ordinarily characterize scurvy, may be produced without neccssarily being accompanied by a diminution of the fibrin of the blood. It is not now in the diminution we must place the proximate cause of scurvy, nor is it any more by it that we may hope to explain many of the symptoms of this disease, and in particular the numerous hemorrhages which constantly coincide with and characterize it.

"The fibrin is in some cases found to be in excess in scurvy, as in the phlegmasiæ, and the clot to be firm and even to present the cupped appearance. The blood is greatly deficient in red globules, while there is much excess of water resembling the blood of chlorotics.

"M. Andral's Analysis of 1,000 parts of the blood of a scorbutic patient gave of

"Fibrin	4·420
Globules	44·400
Solid materials of the serum . . .	76·554
Water	874·626
	1,000·000"

(*Dr. Yandell's Notes on Medical Matters and Medical Men in Paris. Western Journal of Med. and Surg. Nov.* 1847.)

Mr. Busk's Analysis of Scorbutic Blood.—The blood has been analysed by Mr. Busk in three well-marked cases of scurvy that occured in the Dreadnought Hospital-Ship, London, and the result given in tabular form, together with the result of his analysis of healthy blood, as follows, to wit: a thousand parts contain of

	Scorbutic Blood.			Healthy Blood.
	1.	2.	3.	
Water	849·9	835·9	846·2	788·8
Solid constitutents	150·1	164·1	153·8	211·2
Fibrin	6.5	4·5	5·9	3·3
Albumen	84·0	76·6	74·2	67·2
Blood-corpuscles	47·8	72·3	60·7	133·7
Salts	9·5	11·5	10·9	6·8

(*Simon's Chemistry of Man.*)

The coagulation was perfect and rapid in each case, and the clot cupped and buffed.

The buffy appearance has been ascribed to the presence of local inflammations; there being a strong tendency, to congestions, effusions, and local disorganizations in the various organs and tissues of the body in scurvy. If, however, fibrin is regarded as detritus of the solids, according to the views of Dr. Simon, the increased proportion of it in scorbutic blood is accounted for on very rational principles. According to Rokitansky this excessive fibrinous condition, his fibrinous crasis, owes its excess to effete fibrin, or bad fibrin, or worn out tissue not eliminated but re-organized; hence the local inflammations, and fibrinous exudates as in croup, etc. This is probably correct. Fibrin for the formation of tissue, and fibrin from worn out tissue make the excess in scorbutic blood. So of the salts. There is an excess of the fibrin and of the salts of the blood in scurvy, except, perhaps in those forms where the serum has been drained off as in cholera, but this excess is not available for the purpose of nutrition being excrementitious: the new fresh and available fibrin and salts are minus, not plus.

Hemato-pathology, then, so far as it has been pursued in the investigation of the pathology of scorbutus, also sustains the doctrine maintained by us, viz.: that the scorbutic condition is one of want—the materials are not furnished in the ingesta, or the conditions of air and warmth are unfavorable to nutrition. This subject will be further considered in reviewing the papers on scurvy coutributed since the Irish famine.

Our reference to vegetable chemistry throws light on the utility of vegetable food in scurvy. The succulent vegetables and fruits, elaborate all the mineral, earthy, and alkaline salts necessary for health, if we will but eat them; and the greater the variety the better. Chemistry will yet do much more to establish what elements are most deficient in the various forms of disease, and what medicines, either from the mineral, vegetable, or animal kingdom are the best remedies for restoring the lost elements, and the best aids to induce the conditions most favorable for re-combining the effete elements for rapid excretion. This appears to be the two-fold mission or

main service of medicines in the art of healing. According to Rees, lemon-juice acts favorably in rheumatism on this latter principle, by facilitating the elimination of urea, as appears by a note of the English editor of Pereira's Materia Medica: "Lemon-juice has been recommended as a remedy in acute rheumatism and gout, by Dr. Owen Rees, and has been used with success by many practitioners, not only in this country, but in Italy, France, and America. Dr. Rees considers the citric acid to undergo changes in the stomach, and to supply oxygen to such elements as tend to produce uric acid, and thereby to induce the formation of urea and carbonic acid instead.—*Ed.*" (*Pereira's Mat. Med.*, vol. ii. p. 976.) This leads us to a few remarks on the chemistry of medicines.

Illustrations from the Chemistry of Medicines.—The Chemistry of man shows the elements of which he is composed. We have not gone elaborately into this branch, but have shown that his food must contain the elements of which he himself is composed, or his machinery must inevitably get out of repair. This is so plain a matter that to gainsay it would betoken insanity. The chemistry of vegetables and fruits used as the food of man, shows that they abound in all those elements necessary to sustain him in life and health. They abound in carbon, oxygen, hydrogen, and the mineral, alkaline, and earthy salts, and some of them contain nitrogen largely. This is the case with wheat and other grains; peas, beans, etc., still it cannot be denied that the flesh and blood of herbivorous animals afford the nitrogenous elements in a more perfect, elegantly organized, and desirable form, and claim preference therefore, establishing it as man's rightful province to kill and eat. We have not gone largely, either, into the chemistry of vegetables and fruits, but still, far enough to elucidate our peculiar views, and show why and wherefore vegetables and fruits are so preservative of health, and so restorative under disease. Nobody doubts their efficacy in scurvy, it is an established fact, but why, no one has shown before. We have no hesitation in affirming also that vegetables and fruits are equally efficacious in disease not considered scorbutic, and that a full and free use of them is

the general preservative against all forms of disease. The Trapists, a religious order in France, founded by La Trap, live on vegetable food alone: this is a rule of the order; and they are, as a body, uncommonly free from all forms of disease; and I have it from the mouth of one of the clergy of the order (of the society near Bardstown, Ky.) that a case of cholera, or a case of consumption has never occurred in the ranks of the order, either in France, the United States, or any other country. Cholera has prevailed in its epidemic form, in their immediate localities, but never a member has been attacked. Travelling in the stage from Louisville to Bardstown in Feb. '56, we met with a Mr. Wright, who resides four miles south of Louisville, having married into the Doup family, noted as horticulturists and fruit growers for the Louisville market. He stated a remarkable fact, viz.: that his child, now an infant, can look upon an unbroken line of living ancestors to the fifth generation. Its parents, grand-parents, great-grand-parents, and great-great-grand-parents, are all living, and growing vegetables and fruits for the Louisville market! what a commentary on the benign influence of a vegetable and fruit dietary. Now, the preservative efficacy of vegetables and fruits lies not in their carbon, oxygen, hydrogen, or nitrogen, according to our view, for animal food and water would supply these, but in those various salts of the mineral, earthy, and alkaline bases in which they so abound, and by which they are enabled to repair the daily waste of these elements, without which the fabric dilapidates into first, the latent, unseen, predisposition to disease, which we call primary pathology, or the latent scorbutic diathesis; and secondly, into all forms of disease, which are but the epiphenomena. Any one who has gone so far in mathematics as to solve the question, into how many different positions the nine digits may be cast or transposed, will have no difficulty in comprehending why there are so many forms of disease, when health is seen to depend on a due supply and proportion of more than double that number of elements, and their binary, ternary, and quaternary compounds. Yet the chemistry of medicines is all but a dead letter in the practice of the healing art as it now stands; but with the new views we have maintained, set before the eye

of the prescriber, the matter of the chemistry of the remedies prescribed, is the one all-important thing. We cannot go elaborately into this subject either; our limits will not permit; but we hope what we do say may prove suggestive, that others may elaborate it. We have spoken of two classes, reutrients and eliminants, which must at once strike the common sense of the mind, and convey a rational idea of their mode of action or operation. The mode of action of medicines, we are aware, is exceedingly obscure, and much time has been unprofitably spent in theory and controversy on this subject. The sympathetic action of a medicine, as the solidist maintains, amounts to nothing, if admitted; the mind gathers no rational indication therefrom; the alterative action maintained by the humoralist, leaves every thing just as much in the fog; and the dynamic action of the homœopathist, is not a whit more lucid. The hydropathist maintains in opposition to all therapeutists, so far as we know, that medicines do not act on the system at all, but the system acts on them, the action being a sort of intelligent effort to get rid of the vile stuff! If we admit the nutrient effects of medicines, there is no more difficulty in understanding their mode of action than there is of comprehending how beef and cabbage operate; and if we admit the chemical action and reaction of the acids, bases, and their salts in the living system, there is no difficulty in comprehending how medicinal agents abounding in these elements favor and facilitate the elimination of the debris of the tissues. We cannot in the present state of medical science, measure the processes by which the silicate of lime in a potato is finally precipitated a phosphate in the bones, nor the chemical processes it may go through when liberated again from bone in its outward course along the road of excretion. And we are just as ignorant of the processes by which every other element, all the elements are marshalled to their transient abodes as components of the several tissues, and again dissolved to beat a grand retreat after a night's lodging. But such is the beautiful and harmonious play of matter which infinite wisdom has established as governing mortal life and health; this much we do know. We know more: common sense tells us that the want of the elements, or any one of

them in the food, must induce disease. The complaint may not be set up in a day, or a week, but sooner or later the fault will appear in some form of impairment of the health. This *we* call primary pathology, or the scorbutic diathesis, because we have seen it produced in a thousand instances by an abridged dietary, and the objective signs are the same as all authors on scurvy describe. If there be any other primary pathological condition than derangement or impairment of this laboratory of nutrition, we are ignorant of it. Talk of vitality, this laboratory is life itself; there is nothing but spirit beyond it. Anything that impairs it, impairs life; that is, impairs health until life ceases, until the laboratory can no longer operate, when the spirit departs. Now, as we have said over and over again, the want of the elements in the ingesta is not a greater impediment than extreme impressions of temperature; for if the laboratory is reduced to so low a temperature by winter's cold, that it may be said for illustration, to be frozen up for several months; or, if elevated by summer's heat, say for illustration, to the boiling point for months, then obstruction to the harmonious re-actions, deposition, and resorption of the elements, is just as certain to occur as though the elements were not furnished. And just so foul air operates to impede elimination by the great emunctories, the lungs and skin, and embarrass the nutritive function. Defective alimentation, aeration, and calorification, are then, as we cannot repeat too often, the three *only* sources of pestilence, or what is understood by epidemic, endemic, or sporadic disease, and the beginning of this condition is impaired nutrition in all cases, unquestionably. We have then two rational indications to fulfill in the administration of medicines, viz.: to build up by nutrients, and to get rid of the rubbish by eliminants; to furnish nutrients in the most elegant form, and so as, if possible, to be desirable to the gustatory sense under disease; and besides those, agents too that shall facilitate the exeretion of the effete debris. To fulfil the first indication has heretofore hardly been considered a part of the art of prescribing: nutrition residing in medicines will now, possibly, be regarded as heterodox in us. As to a proper dietary for the sick, no rational view obtains;

the main usage is a blind restriction to the farinas, not backed by any sound reasons based on true science, for the farinas are barren of the acids, bases, and salts, and in this the homœopathist excels, if possible, his brother allopathist in blind theoretical absurdity, by a prohibition of acids in the daily dietary, the most essential agents for waking up the dormant laboratory. The most sensible suggestions on diet for the sick we have ever seen, were from the pen of Dr. Charles Hooker, before quoted, page 223, and are worthy of all praise but still he is not governed by science in the matter—a regard to the chemistry of the food prescribed. The homœopathist has this advantage, however, he does not go systematically to work and break down the system by depletion—V. S. and heroic drugging—already smitten, reeling, and staggering. It is only desirable to get rid of the effete elements in the circulation, and leave all the balance, which never can be done by V. S. or drastic purging. Sweating is a much more rational method, induced either by the vapor bath, nauseants, or emetics, or even heroic drugging by quinine and morphine. But we are not aiming to show the fallacies of the present practice, only the more rational indications our theory of disease suggests. We might properly enough in this place discuss the prominent theories of the so called fundamental methods of cure; whether medicines cure on the allopathic principle, by setting up another disease; on the homœopathic principle, by inducing a similar disease; or on the antipathic principle by antagonism, opposing the disease; but the truth is, we consider all these methods to have originated in a very imperfect knowledge of what disease is, in what its essence consists, and what its cause. Believing as we do that all disease is primarily and essentially impairment of nutritive life, we do not regard the resultant phenomena, the symptoms, as the main guides to govern practice. It will appear farther on, when we discuss the laws of epidemics, that the most illustrious physicians have found it necessary to treat all diseases alike when a great epidemic prevails, because all diseases put on its livery. How is this? why is this? why simply, that starvation has been stealing on insidiously, has become epidemic and intensified in a locality. When worst

comes to worst, then all diseases are to be treated alike. All practitioners, without an exception, as they grow older, lose confidence in the power of medicines to save; cease heroic drugging, and rely more on hygiene. These facts all tend to corroborate the view we maintain of the nature of disease; and as under this view a rational method of cure presents, governed by the knowledge of the cause more than by the symptoms, it is unnecessary to animadvert on any of the imperfect methods founded on symptoms. Remove the cause; or remove the patient from the conditions under which the nutritive function has become impaired, supply all the elements of nutrition, and he will get well without medicines, if disorganization has not gone too far in any part—beyond reparation. Still there is virtue in medicines, nutrient virtue in the many acids, salts, bases, alkaloids, etc., they contain, addressing themselves either directly to the nutritive function, or indirectly by commencing those reactions necessary to depuration. A few illustrations drawn from the analysis of medicines will convey this idea more fully. We have abstracted them from Pereira's great work before quoted, and without giving the entire analysis in tabular forms, or by whom made, or the quantities and proportions, refer the reader to the separate articles in said work.

Irish Moss, for instance, contains chloride of sodium and magnesium—oxalate of lime—sulphur, chlorine, and bromine—and sundry free acids; in addition to the constituents of all vegetables and animals, viz.: carbon, oxygen, and hydrogen: and the allied

Ceylon Moss, sulphate and muriate of soda—sulphate and phosphate of lime and iron—and chloride of calcium and sodium; hence their value as *nutrients*, not as demulcents on account of the mucilage they contain.

The Helebores, and the officinal Asagrea, from which Veratrum is derived, contain chloride of potassium and sundry vegetable salts of potash—oxalate of lime—carbonate of potash and lime—phosphate of lime, and silica, besides several free acids. Now helebore was a remedy with Hippocrates in cholera, and, is with the Hahnemann school at this day; but no rational reason, if we may be allowed the expres-

sion, has before been suggested as to its therapeutic efficacy. The theory, similia similibus, founded on its drastic effect, even if admitted as an explanation, loses its force when the dose is so small as not to produce an irritant impression on the alimentary canal; and to say it operates dynamically, addresses one's *faith*, not reason. But, to entertain the idea of the power a very minute dose, thirtieth dilution even, may exert on nutrition, in establishing reactions which facilitate the re-combining of effete elements, and the elimination of corrupt detritus, and every mind possessed of common sense, who has studied the subject of chemical tests, can see the basis of its power, revealed by its chemistry. The test of iodine on solutions of starch illustrates this.

Ginger contains acetic acid—acetate of potash—sulphur—carbonate and sulphate of potash—chloride of potassium—phosphate of lime, alumina, silica—and oxide of iron, and manganese; to say nothing of its aromatic, wholesome qualities as a stimulant or stomachic.

Sarsaparilla contains pectic acid—acetic acid—chloride of calcium, potassium, magnesium—carbonate of lime—nitrate of potash—oxide of iron, and aluminum. There is then, no question of the efficacy of this drug in the chronic ailments for which it has been long held in esteem by the great majority of the profession, although it has not the startling power of a poisonous drug. And it should be borne in mind that these minerals, acids, and salts, are more elegantly formularized in plants, and the pharmaceutical preparations are neater than art can compound them. The view we present, also shows the fallacy of the received notions regarding incompatible substances. It also shows the fallacy of the idea of the specific effect of a simple drug, when the tincture of any plant whatever is administered, for we see they all contain a variety. A formula or prescription made up of the articles contained in sarsaparilla would be rejected, or debarred admittance into any pharmacopæia as unscientific.

Rhubarb contains clumps of crystals of the oxalate of lime, in the proportion of thirty-five or forty grains to the hundred (Queckett)—potash, silica, carbonate of lime, magnesia—aluminum—oxide of iron—rhubarberic, gallic, and pectic acid—

malate and galate of lime—sulphate of potash—chloride of potassium—phosphate of lime—oxide of iron—soda—phosphoric, carbonic, sulphuric, and muriatic acids. No wonder Abernethy found it reliable in minute doses.

Digitalis contains oxide of iron—potash—acetic acid—lime—and oxalate of potash. This last is a poison, producing death almost as speedily as hydrocyanic acid. This probably explains the peculiar effects of the remedy. And then the question arises how do poisons produce their effects? We have already signified that their slow operation is by impairing the nutritive function, and instanced lead and mercury as examples; and if mercury ever cures, it may be said to cure on homœopathic principles, for it produces an artificial scorbutus, to all intents and purposes; but this explanation amounts to none at all, when it is said. But if it produces a rapid and extraordinary elimination, and displays a power in this regard equal to the breaking-down of fibrin, absorption and elimination of the tissues themselves, the spreading of ulcers and the death of parts by gangrene, surely its power is displayed on nutritive life. Well, then, if the slow poisons operate on the nutritive function, why not the acute? We can better conceive of this mode than any other, for we have an analogy in suffocation from drowning, where all elimination either from the lungs or skin is suddenly arrested. Suppose the introduction of a fatal dose of hydrocyanic acid to possess the property of suddenly arresting the operations of the chemico-vital laboratory, (and this should be no greater marvel than that the inhalation of a little chloroform should produce universal anæsthesia,) and death must ensue as rapidly as in drowning. We do not say this is positively the explanation, but it looks to us much more reasonable than any explanation we have seen. Cut off nutrition from an organ and its function at once ceases. Arrest it universally, and instant death ensues. Its varied and partial impairments result in the thousand-and-one ailments of mortals, called diseases. But we cannot dwell on these interesting points.

The Potato, (to the chemistry of which we have alluded,) is arranged by Pereira, along with medicines, and from the analysis given, it is seen to contain chloride of potassium—

silicate, phosphate, and citrate of iron—magnesia, alumina, soda, potash, and lime. Potash and citric acid are said to be the prevailing ingredients. Now, the reason why the potato established its claims to universal favor as an article of diet, in spite of the edicts of monarchs, is very apparent.

Myrrh contains the benzoate, malate, phosphate, sulphate, and acetate of potash and lime.

Grape-juice contains malic and citric acid—bilartrate of potash—sulphate of potash—malate, sulphate, phosphate and muriate of lime. Hence the reason why grapes are so much esteemed as fruit, and one reason why wines are healthful beverages, for they do not let fall all their salts, in fermentation.

Lemon-juice contains malic and citric acid, and citrate of potash. Hence its utility in scurvy, rheumatism, and not on account of the oxygen it contains, as Dr. Rees thinks, for water affords that. In the matter of the reactions it set up, he may be correct. It is diuretic.

Cod-liver oil contains iron, soda, magnesia, lime, potash, chlorine, bromine, iodine, bilifulvin, glycerine, gaduin; oleic, margaric, butyric, acetic, felenic, cholic, and bilifelenic acid. Hence the efficacy of this product as a medicine, and not on account of the carbon so much as has been supposed. Here is a laboratory of chemicals. The reactions that must be set up in the blood, organs, and tissues, when cod-liver oil is daily administered can be imagined but not accurately described. We know when chemicals come in contact in solution reactions ensue; and the proofs that these reactions are salutary and subserve the nutritious function, are found in the success that has attended the adminstration of cod-liver oil in consumption, nursing sore mouth, and other scorbutic conditions. This is the secret of the success of mineral waters, also, in the cure of chronic affections. The most astonishing cures are annually effected in this way of invalids, as it were, hopelessly dilapidated; and thousands upon thousands less seriously affected are relieved, recovered, or rejuvenated, even, by a few weeks or months residence at some of the noted mineral springs. This is not a work of the imagination, but a positive truth, and the secret is now apparent *how* the cures

are effected—the nutritive function is supplied with the mineral ingredients these invalids have failed to receive with their food. In addition to this elimination is quickened, and the mind becomes hopeful, exercise becomes agreeable, and almost a miracle is wrought. Indeed there is but only one law of healing—re-invigorating the nutritive function.

Chemistry and physiology, then, it appears to us, fully sustain our views and conclusions as to the pathology of disease. The view we entertain of medicinal agents, though perhaps not new, still has never been thus presented and enforced in support of the like conclusions. It seems to us that our argument throws light both ways—on the nature of disease and the action of medicines, opening a rational pathology and a rational therapæia, which has certainly not been the case heretofore.

CHAPTER II.

CORROBORATIVE EVIDENCE THAT THE SCORBUTIC DIATHESIS IS PRIMARY PATHOLOGY, DRAWN FROM THE OBSERVED LAWS OF NATURE GOVERNING PRODUCTION, LIFE, AND DEATH, THE PHENOMENA OF EPIDEMICS, AND CERTAIN THEORIES OF DISEASE.

SECTION I.

EVIDENCES DRAWN FROM CLIMATIC INFLUENCES, THE CONSTITUTION OF SEASONS, AND THE LAWS OF EPIDEMICS.

Special pathology is forever taking note of the thousand-and-one forms of disintegration or changes of structure, which arise from what are called organic diseases. Diseases are divided into two great classes, functional and organic. If our doctrine is true, there is no foundation for this division, for every functional derangement depends upon an impairment of the elementary constitutents of the structures of the organs. There is a fault in the nutrition. Some of the ingredients are wanting, perhaps, or the proportions of the component materials are not right and normal, consequently the functions are imperfectly performed. If a gland be the scapegoat, the more special suffering victim, the secretion is morbid, vitiated, deranged; if the stomach, dyspepsia ensues; if the lungs, hemoptysis perhaps, ending in tuberculosis. Thus disease becomes localized and differs, as Hippocrates truly said on account of its location. Whether or not the sage understood the matter as we do is another thing. He certainly did not explain general pathology, or primary pathology, as we have, nor has any one since his ancient day, to our knowledge. We stand alone in the view we have set forth in the preceding chapter as to the nature of primary pathology. With this key all special diseases may be elucidated and explained, and, did the limits of this work permit, we would illustrate the truth of our doctrine by the consideration of special diseases: as for instance, how plain it

is that the class of apoplexies and palsies is a scorbutic hemorrhage upon the spinal axes; the class dropsies, a serous scorbutic hemorrhage into the shut sacs; the class choleras, the same into the alimentary canal; the class phlegmasiæ, a fibrinous scorbutic hemorrhage into irritated and weakened parenchymatous structures and organs, and upon secreting surfaces. In croup this hemorrhage, or exudate destroys life by coagulating and blocking up the trachea, and in the interior structures, suppuration is the consequence, etc., etc. Any more elaborate illustrations of the doctrine, however, through special pathology, we must forego and adhere to the broad fields of general pathology. All organized structures, animal and vegetable, doubtless fall a prey to decay and death from the natural causes that impair nutrition. The potato blight is the result of extraordinary seasons by which the tubers are deprived of the normal proportion of the salts of potash, lime, etc.; the failure of the grapes in Madeira is due to an exhausted state of the potash and other salts in the soils of the vineyards, doubtless. They want the proper elements of nutrition. These are famines and resultant epidemics in the vegetable kingdom. All these things pertain to general pathology, for the productions of the earth depend upon the constitution of the seasons, and man's health on the abundance and pefection of crops. A glance at climatic influences and the constitution of the seasons preceding and during pestilential periods will be calculated to illustrate the truth of our doctrines, to which we now invite attention.

Hippocrates on Topography.—*Southern exposure.*—"A town exposed to the hot winds that blow between the rising and setting sun of winter, viz: from the south, and which are common to it, whilst it is protected from those of the north, * * * * if the summer is dry, diseases are of short duration [rapid and fatal]; but if wet, they are of longer continuance [not so putrid]. From the most trifling causes, wounds degenerate into eating ulcers, [because of scorbutus.] * * * * The constitution of the inhabitants is in general relaxed. * * * * * Women are subject to catarrhs, and many are barren, rather from disease than from nature; abortions are frequent.

Children are subject to convulsions and suffocations, [croups ?] that are often confounded with epilepsy. The men have dysenteries, diarrhœa, and *epial* fevers, [a species of continual fever, says Coxe,] eruptions like flea-bites [petechiæ], chronic fevers of winter, and hemorrhoids. Few pleurisies are there seen, or peripneumonies, or ardent fevers, and other acute [inflammatory] diseases; such cannot be frequent when the bowels are relaxed. * * * * Such are the usual diseases in the places I have described, independent of *epidemics caused by a change of the seasons"* [italies ours]. —*Coxe's epitome of the writings of Hippocrates and Galen*, p. 182.

The hot winds from Africa are debilitating to the constitutions of the inhabitants in towns having a southern exposure in Greece, protected by hills or mountains on the north. Of course these general causes subject the inhabitants of those towns to deeper taints of inlaid scorbutus, the basis of their more putrid diseases.

Northern exposure.—"Places situated in an exposure directly opposite, where the winds are cold, and usually blow from the north, and which are free from both south and all hot winds. * * * The men there are strong and not very fat, etc. * * * Pleurisies, and all diseases called acute are there. * * * * The term of life is in general longer than elsewhere; wounds do not inflame nor take on a bad state. Such is the state of things, independently of diseases induced by change of seasons. * Parturition is laborious, but abortions are rare, * * * many after delivery fall into phthisis, * * * * puberty is tardy." (*Ibid.*)

We assure the reader that the frequent lacunæ in our quotations, marked with stars, do not change the sense, and are only made in order to brevity. The cool northern exposures, protected from the hot winds of Africa, are more salubrious; but there is no exposure, no climate, no residence exempt from the general causes that inlay the scorbutic diathesis—it is the law of God that man must die, and that he must die of some form of disease based on interrupted nutrition. We are not responsible for the name this natural

affection has received—scurvy—but we are for all else we claim concerning it.

Eastern exposure.—"We are now to speak of cities located towards the east. Such ought necessarily to be more healthy than those having a north or south exposure, *for the heat and cold are there less felt*, [Italics ours,] * * * hence the men have a good color, and much vigor, unless affected by sickness, their voice is clear, and they are more lively and intelligent than the inhabitants of a northern exposure. *The productions of the earth, moreover, are superior.* [Italics ours.] In a town thus situated, in which *the heat and cold preserve the temperature of spring, diseases should be mild and few in number.* [Italics ours.] They are chiefly of the same character with those in cities looking towards the warm winds. The women are very fruitful, and have easy labors. Such are the circumstances in such exposures." (*Ibid.* p. 182.)

The reader will please to notice the reason Hippocrates gives *why* towns looking to the east are the most healthy, theoretically, viz.: the *equable temperature* they enjoy. Compare this with our remarks, page 257, on the eastern sides of the groves in Illinois, and our further deductions. Also the further observation of Hippocrates, that the "*productions are there superior*," with our doctrine in general of the effect of the abridgment of the productions on health. Also, the further remark of Hippocrates we have put in italics in the above quotation on the effect of *equable temperature* on diseases, with our doctrine touching malaria. Who does not see that we are fortified by the deductions of the great lights of the profession?

Western exposure.—As to places looking to the west, and which feel no winds from the east, but are exposed to those from the north and south, their position beyond all others *is most favorable to disease.* [Italics ours.] * * * * During summer, the early breezes cause an abundant dew, [rather it should be said the cool nights,] whilst during the remainder of the day, the heat scorches and oppresses the inhabitants. Hence their complexion is bad, and they have little vigor. They are liable to every disease I have mentioned, without an exception. Their voice is hoarse, in-

fected with the miasmata of disease, and from which it is not purified by northern winds. Those that blow, are charged with moisture, for the western winds place the atmosphere in a state resembling that of autumn; and a town thus situated, therefore, partakes of all the *inconveniences which the evenings and mornings bring with them.* Such are the remarks I have to make as to good or bad exposures." (*Ibid.* p. 183.)

The reader must be struck with the similarity of the deductions of Hippocrates drawn twenty-two or three centuries ago, and ours of this day, when we aver that we had not consulted Hippocrates prior to the publication of our views. They are the same essentially. Hippocrates does not account rightly for the heavy dews of hot exposures; but the mischievous effects on health of alternations of temperature between night and day he knew full well. Again, he uses the word miasmata as Hahnemann does,—an internally seated matter, not an exhalation from the swamps.

Hippocrates on the Constitution of the Seasons.—The sage of Cos was a close observer, and his doctrine is, "As the constitutions of the year, so are the diseases. If mild and not tempestuous, the diseases are not difficult to manage." (*Coxe's Epitome—Book on the humors*, ch. v. p. 105.)

This is true, generally speaking, but sometimes the blights of one year are not felt till the next, when epidemics break out though the seasons are mild and equable, deceiving superficial observers; and sometimes a series of blighting years and tempestuous seasons occur antecedent to extraordinary pestilence, and the climax of fatal consequences occurs in a mild season. This was the case in 1832, when epidemic cholera first raged in the United States; it was the case also in 1665, the year of the great plague in London.

Effects of Summer Heat.—"If heat predominates, the diseases are bilious, and should it be extreme, the spleen becomes affected." (*Ibid.*)

Thus it is now also, but the why and wherefore who has explained? Nutrition is disturbed—the scorbutic diathesis is implanted.

Effects of Localities, etc.—Malaria.—"Some diseases arise from marsh and other exhalations. [Lancisci's doctrine of malaria was borrowed, then, from Hippocrates.] Some are congenital and are detected by inquiry. Some are endemic, peculiar to certain regions, and attacking numbers. Others originate from a peculiar constitution, regimen, locality, or season. Unhealthy situations produce diseases corresponding to the constitution of the atmosphere that is dependent on their locality. Sudden changes of temperature bring on complaints, etc." (*Ibid.*)

These are doctrines held to this day, and contain truth mixed with error. The rationale of these etiological points is given in our deductions under topography of Illinois, essay on Nursing Sore Mouth, where it is shown that *impaired nutrition* is the consequence of all these adverse climatic influences, and disease of one sort or another then sets in under any exciting cause. The causes of disease are not specific, and as numerous as the classes, orders, genera and species of disease according to Nosologists, but are referable to three sources only, viz.: imperfect alimentation, aeration, and calorification. But let us pursue Hippocrates on these interesting matters still further.

Effects of cold winters and wet springs.—"If the winter is dry and constantly chilled by the north wind, the spring rainy and heated by the south winds, the summer will necessarily bring with it numerous fevers, etc." (*Op. cit.* p. 187—*On Airs, Waters, and Localities.*)

This accords with our observations in Illinois, viz.: a cold winter and wet spring brought a sickly summer; but Hippocrates only recorded the fact, the coincidence as a general truth, whereas we have given the reason why, to wit: A cold winter disturbs capillary nutrition; destroys laid up stores of succulent food; and otherwise disposes to scorbutus by confinement within doors, inaction, and foul air; and a wet spring but adds to the calamity by prolonging confinement and retarding the cultivation of early vegetables; and the summer heat develops latent into active scorbutus. Strictly speaking, there are but two classes of causes of diseases, viz.: *inlaying* and *developing*, *inducing* and *exciting*, and pushed to

their ultimate they both depend on meteorology; for the abridgment of food comes of frosts and droughts, etc. Topography, after all, is but the study of local climates. No one can pursue these recorded facts or observations of Hippocrates in connection with the record we made in Illinois, without admitting our deductions, it appears to us.

Effects of extraordinary or non-average seasons.—"When the winter is moderate, accompanied with showers and south winds [hot winds]; when spring is dry and cold, with north winds, pregnant women, who expected parturition in spring, miscarry, or else the offspring are weak and unhealthy, and soon die; or should they survive, they will be small, languishing, and unhealthy. Dysenteries and dry ophthalmies will occur, and catarrhs in the head, falling upon the lungs, * * * * when summer heats arise, great and sudden changes ensue, with diseases ending in dysentery and dropsy, etc." * * * (*Ibid.*)

Now, who does not see the evidences of the inlaid scorbutic taint here, just as palpably as we observed, and have described it in our essay on Nursing Sore Mouth, in the spring and summer of 1835, in Illinois? Is there anything else that will produce an epidemic of abortions, and still-born infants in the spring, and diseases ending in dysentery, etc., in summer? We again refer our readers to Dr. Budd's views: "We have seen," says he, "that the approach of scurvy is gradual, and that prolonged abstinence from succulent vegetables is necessary for its full development; but it is our opinion that something short of this, that a condition which might be correctly designated a scorbutic taint, must often occur in the lower classes in towns, but especially in prisons and asylums, towards and at the close of long winters when succulent vegetables are scarce and expensive, etc." (*See Tweedie's Practice.*) Here is the whole secret in a nut-shell. There never will be any other solution of the matter; and it is not dependent so much on the constitution of the year in the *abstract*, as on the fact that "succulent vegetables are scarce and expensive." The observations of Hippocrates but confirm our views.

Hippocrates on the Laws of Epidemics.—While our new

philosophy maintains the doctrine of a *one basis* for all disease, viz.: the *scorbutic diathesis*, inlaid by defective alimentation, aeration, or calorification, or all three coöperating; extraordinary seasons lying at the bottom of the mischief, abridging food, interrupting nutrition by inordinate contraction of the capillaries, by winter's cold, or prolonged congestion by summer's heat, it accounts rationally for the many and various forms under which active diseases are developed by vicissitudes, etc., to wit: inherent constitutional differences, age, sex, habits, stage of the predisposition, and other surrounding accidental circumstances. Now, on this basis the phenomena not only of sporadic and endemic forms of disease are shown to be in harmony with our philosophy, but those extraordinary manifestations of pestilence also, called epidemics; for, according to the intensity of the inlaying causes, by a series of extraordinary years, and ardency of the developing causes, extreme thermometric impressions, will the diseases assume or approach one type, or put on a similar garb and prove rapid and fatal, swallowing up, as it were, all other diseases. The interfusion, intercurrence, and change of type, sometimes seen, the law of which is beyond any satisfactory explanation on any other basis, is explained by our philosophy, and becomes a rational law. The doctrine of the specific cause and individuality of diseases, is shown to be an impossibility, by this conformability of all nosological differences toward the dominant type: it rebukes it as a falshood. Etiology, without our philosophy, is but blind conjecture; pathology but dreamy visions, hopes, and disappointments; and therapeutics but striking at an enemy in the dark. But this is the condition under which the ancients of greatest repute have handed down professional dogmas, and the moderns follow them—the blind leading the blind. To substantiate this, we quote from Hippocrates as follows:

Defects of Diet and Air as the Origin of Epidemics.—"Some diseases arise from the diet or regimen employed; some from the air we breathe. [?] Whenever, in the same place, many persons are attacked with the same disease, at the same time, we must attribute this to some common cause. Now this is the air. [?] It is evident it cannot be the diet,

because the disease attacks all, indiscriminately, men and women, great drinkers and such as drink water only, those who eat cakes alike with such as live on bread [a distinction without a difference, a one-kind of diet in either case], laborers and the idle. Diet is therefore by no means the cause of the evil, since persons living in a way so opposite to each other [we cannot see much difference in the power to ward off scurvy between living on cakes and living on bread, even admitting sugar, eggs, and spices are ingredients in the cakes] are equally attacked by the same disease. But when, at the same time, diseases are altogether different, it is obvious that the diet of each must be the source of the disease of each individual [we think it is in both cases]. The cure must then be effected by opposing to each the reverse [diet] of that which tended to excite his disease, as I have elsewhere explained. [Quere, would a diet on homœopathic principles ever cure?] * * * When an epidemic disease prevails, the cause of it assuredly is not in the food we take, but in the air respired [assertion without proof], in which something noxious is to be found [assertion without proof again]. In such a state of things it is useless to change the mode of living (diet), since it is not from thence the evil originates [assertion without proof a third time]." [*Coxe's Epitome of Hipp.* p. 154—*On the Nature of Man.*)

Now the teachings of Hippocrates are good authority when we find them sustained by modern science and established facts, but good for nothing when not thus backed.

Hippocrates knew nothing of the constituent elements of the human system; nothing of the constituent elements of food; nothing of the constituent elements of air. How, then, could he speak so knowingly, boldly, and confidently, and decide that defective aeration produced epidemics, and defective alimentation all manner of sporadic ailments? It is manifestly but an opinion founded on appearances, just as the heavenly bodies appear to move around the earth daily, and tested by modern science is just as void of truth.

The quotations oppose our theory of epidemics, while they show from whence the present vague notions of an "epidemic influence," or "something noxious in the air" arose. But the

power for evil of improper diet is as strongly maintained as we could wish, and herein lies the value of all Hippocrates has said on the subject. He has hit a great truth, but missed its just application. The truth stands, but the error falls when tested by modern physiology and chemistry, as the reader will more clearly perceive in progressing onward.

Extraordinary Years and Seasons as the Origin of Epidemics.—Hippocrates wrote seven books on epidemics, and he prefaces his books by a description of the constitution of the years of the pestilential period. "It contains, under three sections, the statement of the seasons for three years as occuring at Thasus, [the place of his residence,] followed by the rise of an epidemic state of disease of two years' continuance," and we will draw from it sufficient to show his illustration of extraordinary years governing epidemics. The reader is to bear in mind the main fact, viz.: that extraordinary seasons blight and abridge the crops and fruits.

"*First Year.*—In Thasus in the autumn, about the equinox, and under the Pleiades, the rains were great, continual, and soft, as when the wind is southerly. The winter mild with southerly winds, and very little northerly. With these were greater droughts than ordinary, so that the whole winter was, in effect, like the spring. The spring was also affected with southerly winds, but yet was cold, and a little wet. The summer was for the most part cloudy and dry. The Etesiæ [north winds] blew but little, faintly, and irregularly. The whole year being thus affected with southerly winds, and greater droughts than ordinary, early in the spring (from the former year's being different, and affected with northerly winds) some few were attacked with burning fevers of a kind good sort, and a few others with hemorrhages, neither of which proved mortal. * * Early in the summer, and from that time till the winter, many of those who had been for a long while somewhat consumptive, were laid up with consumptions; and others, who were doubtful, were then fataly convinced. Others again, where nature tended that way, dated the beginning of it from that time. * * * The manner in which most of them were affected is as follows. They were seized with continual, acute fevers, attended with a chilliness, but no intermission; of the

semitertian kind; the fit being one day moderate, the next vehement, and so increasing to great vehemence. They sweated continually, but not all over. The extremities were very cold, and grew warm again with difficulty. The belly was disturbed with bilious, small, simple, thin, griping stools, and that frequently. The urine thin, without color, crude, and little in quantity; or else thick, with a small sediment, that did not subside well, but appeared crude and unseasonable. They coughed a little and often, and the matter expectorated was indeed digested, but brought away by little and little, and with difficulty. Where the case was very violent, no digestion happened, but what they spit was continually crude. The throats of most of them were from the beginning and all along painful, red, and inflamed [scorbutic appearance]. The rheum that came from them little, thin, and sharp. A consumption and general disorder soon followed. * * * In the summer and the autumn many fevers came on, of the continual kind, though not violent; and that to such as had been long ill, but in other respects not worn out. * * * Many of them held out so long, as to be ill in the winter; but of all here described none but the consumptive died.

"*Second Year.*—In Thasus, early in the autumn, the weather was unseasonable, and on a sudden grew wet with much northerly and southerly wind, that lasted the whole time of the Pleiades, and even to their setting. The winter was affected with northerly winds; the rains were great and heavy, attended with snow, and for the most part a mixture of fair weather. Thus the whole affair stood; and, with respect to the cold, what happened was not very unseasonable. But after the winter solstice, and when the west wind begins to blow, there was very severe winter weather, with much northerly wind and snow, and abundance of rain without ceasing. Over head it looked stormy and cloudy. This state lasted without remission to the equinox. The spring was cold, northerly, watery, and cloudy; the summer not very scorching. The Etesiæ blew continually; and, about the rising of Arcturus, a great deal of rain fell again on a sudden, with northerly winds. The whole year being thus damp and

cold, affected with northerly winds, they passed the winter well for the most part, but in the beginning of the spring many persons (not to say a great many) were taken ill. First of all appeared humid ophthalmies (or inflammations of the eyes), with weepings, pain, and indigestion. * * * In the summer and the autumn, dysenteries, tenesmuses, and lienteries, were complained of; so were bilious purgings, of a thin, crude, griping nature, and much in quantity. Others again were watery; and many complained of painful fluxes. * * * In the autumn and the winter, continual fevers turned out, besides a few that were ardent, diurnal, nocturnal, semitertians, perfect tertians, quartans, and erratics. * * * The major part could not get rid of their fevers during the Pleiades, nor even till winter. Convulsions were also frequent, especially among children, from the beginning, but not without a fever. * * * Dysenteries, tenesmuses, lienteries, and fluxes were likewise added; and some fell into dropsies. Nauseas and great uneasiness happened with and without these. Whatever was very vehement, either despatched the patient soon, or was of no benefit to him at all. * * * It proved fatal to persons of every age, but chiefly to children just weaned, and to those of eight or ten years old, and those under the age of puberty.

"*Third Year.*—In Thasus, a little before the rising of Arcturus, and during its continuance, there fell many great showers with northerly winds; but about the equinox, and to the rising of the Pleiades, little southerly showers. The winter was northerly, and drier than ordinary. The winds cold, and the snows deep. About the equinox the cold was sharpest. The spring was northerly and drier than ordinary; but yet the weather was a little wet and cold. About the summer solstice a little rain with a great deal of cold, to the rising of the Dog-star; from which time to the rising of Arcturus the summer was hot, and the heats were great and scorching, not gradually or at intervals, but continually. The droughts were also great, and the Etesiæ blew. About the rising of Arcturus southerly gentle showers fell to the equinox. During this state of the weather, in the winter, paraplegias began and attacked many, some of whom died in a short time: for

the disease was very epidemical. In other respects they were well. But in the very beginning of the spring burning fevers came on, and continued to the equinox, and even to the summer. * * * Hemorrhages were very frequent, especially among young persons and adults; and, where nothing of this kind happened, it very often proved fatal. * * * In the summer, dysenteries were epidemical; and even where hemorrhages had happened, some were at last seized with dysenteries. * * * Many women were taken ill, but less than the men, and died less. Many of them had hard labours, and after the birth were taken ill again, and for the most part died. * * * All of my acquaintance miscarried that chanced to be with child. * * * But about the equinox, to the rising of the Pleiades, and even in the winter, burning fevers continued. * * * The number of diseases was now very great, and those who died of them were chiefly children, young persons, adults, and such as had smooth bodies, white skins, straight hair, black hair, and black eyes. The lazy and indolent died likewise, and so did those whose voice was either high, small, or rough, and where there was any impediment in the speech, or a choleric temper. Many women of this kind died too."

The reader is desired to compare this discription of an epidemic and the extraordinary seasons that produced it with our description of the constitution of the years 1834—'35 in Illinois, and the epidemic that arose, see pp. 242 and 274, Nursing Sore Mouth Essay.

Galen on the Laws of Epidemics.—Among the writings of Galen is a book "On the good or bad juices of food," from which we make the following quotation—Coxe's Epitome, p. 563.

"The chief interest of this book, nevertheless, arises in my opinion from other sources; the first of which is, the account it affords us of a mighty famine and plague in Rome, (or rather extended throughout the world,) and continuing for several years. The recurrence from extreme necessity to unwholesome plants and herbs, soon vitiated the fluids, and disposed the system to numerous diseases; such as various affections of the skin, ulcers, erysipelas, phlegmon, herpes, itch, and

lepra, and others, accompanied with fever, affecting the intestines, etc., with dysentery, inflammation of the viscera and bladder, etc., and up to malignant diseases of the highest grade, with all their accompanying and frightful symptoms. In the beginning of these, some physicians bled their patients, and the blood, he tells us, was always bad, of a deeper and darker hue than natural, more watery and accrimonious, and the incision healing with difficulty. Many, it appears, died from eating some of the fungi, cicuta, and other noxious plants."

One brief word in regard to Galen's views. He is writing "on the good or bad juices of food," and in the passage quoted is explaining the *cause* of a great plague in Rome, following a mighty famine, which extended throughout the world, and continued for several years.—(*Coxe.*) Now, who so blind as not to see that scorbutus must have been inlaid to rottenness, judging by the "black" and "watery" appearances of the blood, and the incisions after V. S. "healing with difficulty." And who can shut his eyes to the cravings for vegetables, when it is said "many died from eating some of the fungi, cicuta, and other noxious plants?" These cravings for greens are pantomime evidences of scorbutus that never lie. Rightly interpreted, these quotations sustain our philosophy. The medley of diseases, increasing in force from skin affections to bowel complaints, up to the highest grade of malignant plague, which swallowed up all, is a good illustration of our views.

The date of this plague is not given by Galen, but as he practiced in Rome, after his recall from his native country, Greece, by the Emperor Antonius, until long after the accession of Commodus, A.D. 180, we may safely conclude it to have been the plague that overspread Italy, A.D. 187, and continued three years; the deaths in Rome amounting to five thousand in a day, for a considerable time. The mortality among cattle was also very great. Webster says, in commenting on this plague, "*a famine prevailed at the same time*, and historians ascribe it [the plague] to Cleander, the minister of Commodus, who had monopolized the corn to compel people to purchase from him at an advanced price. Dion

Cassius, however, says, *the year had been unfruitful.*" (*See Webster on Pestilence,* vol. i. p. 75.) All these facts tend to confirm our philosophy, that deficient and defective alimentation lie at the bottom of epidemics, by inlaying scorbutus; and the more deeply inlaid, the more the epidemic conforms to one type.

Sydenham on the Laws of Epidemics.—From 1660 to 1670, a period of ten years, epidemics devastated the world. In London, the pestilence culminated in the plague of 1665. Sydenham practiced in London throughout this pestilential period, and although history records that he ran away from the plague on its first breaking out, he atoned for this act of cowardice by his subsequent bravery in soon returning and practicing throughout the dreadful epidemic. He has described the epidemics of this period, and we do not see how any one can take a comprehensive glance of their portraits, or of the piece-meal records, without awarding to us or to our philosophy the key of explanation. The causes that we have shown to inevitably inlay the scorbutic diathesis, everywhere prevailed, and reached their climax in England in 1664; just as we have shown that extraordinary seasons precede epidemics in our day. We must be brief, but will endeavor to be pertinent.

Constitution of the seasons prior to the Plague of 1665 *in London.*—Webster says of the constitution of the year 1660, it was very tempestuous, and was the commencement of a very sickly period in Europe—that there was a terrible drought in Canada and New England, drying up the creeks and rivers, in 1662, with great sickness—that the summer of 1664 in England was wet, and cattle died of diseases—that in New England commenced the mildew of the wheat, which rendered it impossible to cultivate it—that the winter of 1664–65 was "terribly severe" in England, and the Thames a bridge of ice! these were the phenomena that opened and accompanied the pestilential period under consideration.

Consequences.—Malignant diseases followed influenzas and cynanches in America; and according to Sydenham, all diseases in England assumed new violence as early as 1661, preparatory to the great plague—intermittent fevers became

epidemic in London that year, with more violent symptoms than usual, and in winter, although they yielded, continued fevers prevailed every winter till 1665 with increasing violence. In 1663, malignant epidemics carried off sixty thousand inhabitants in the Venetian territories. The plague raged in Holland the same year. In 1664, Prussia was afflicted with a malignant *purple* fever, and toward the close of that year the fevers became so malignant in London, as to be considered the true plague. (*Webster.*)

Now here is the same coincidence of blighting influences on vegetation and pestilence immediately following, that we have pointed out in the preceding essays, and such influences as *invariably inlay scurvy.*

To Sydenham we owe the dogma that two epidemics cannot hold in the same place at the same time. He says, "Whoever, in the cure of fevers, hath not always in view the constitution of the year, inasmuch as it tends [but he does not explain how] to produce some particular epidemic disease; and likewise to reduce all the cotemporary diseases to its own form and likeness, [but how he does not tell us,] proceeds in an uncertain and fallacious way." (*Wallis's Ed.* vol. i. p. 340.) This despotism of a powerful epidemic, he portrays as extending to the most trifling cases of indisposition; and that where the absolutism of the reigning form of disease was not at once fully acknowledged by all others, still they were forced to do homage by putting on its livery in the main. This is the great law of epidemics with him, and led to the adoption of a *unity of treatment*, (and virtually endorses the doctrine of the *unity of disease*) just as masked agues have to be treated with quinine, whether neuralgia, or dysentery, or suppression of the menses—just as diarrhœas, choleras, fevers and agues, dysenteries, etc., are best cured with acids and quinine. And who does not see in all these illustrations the *unity basis* of the scorbutic primary pathology we maintain? It harmonizes and explains every difficulty; tells us *how* the constitution of the year produces an epidemic; and how an epidemic reduces all forms of disease to its livery.

It is worthy of remark in this place that the seasons, in 1665, during the raging of the plague in London, were

exceedingly propitious. Webster says, (vol. i. p, 200,) "The summer of 1665, in England, was very temperate, the weather fine and the fruits good. All the writers of that day agree, that no cause of pestilence could be observed in the visible qualities of the season." This was the fact also in 1832, in the United States, during the summer of the first great epidemic manifestation of cholera here; but we have explained this—the unpropitious years immediately preceding tell the tale—they throw their combined latent evils on an innocent year. We have been gazing at the stars, and straining our eyes after some noxious agent in the air, and cloaking our ignorance under malaria, and the epidemic influence long enough. It is high time a revision of the facts and testimony was had.

The bills of mortality in London, in 1663, amounted to 15,000 in round numbers; in 1664, 18,000; and in 1665, 97,000! of which 68,000 are set down as caused by plague, and 28,000 by other diseases. The previous summer had been very wet, the corn mildewed, and the winter, '64–'65, terribly severe, and the plague broke out, not only in London, but all over Europe, more or less, and malignant epidemics also in Asia and America. The plague began in London, in June, but Sydenham says a very malignant fever preceded it in May, which he dare not pretend to say was really entitled to be called the plague, (it had all the symptoms, but milder,) and that it prevailed after the plague had ceased, or was supposed to have ceased. How exactly corresponding to epidemics of our time.

Gallup on the Laws of Epidemics. *Constitution of the Seasons of* 1809 *and* 1810.—"It appears from a communication from the Rev. Ebenezer Fitch, president of Williams' College, to Dr. North, that the average heat of this summer, 1809, was two degrees below the average heat of seven successive summers, ending in 1810: and that the average heat of 1810 was one degree below the average heat; and consequently these two summers were considerably colder than usual. This was undoubtedly the fact. The summers of these two years were so cold, that corn did not ripen as usual

in this latitude. I would suggest, that diseases are not much influenced by the sensible qualities of the atmosphere, any further than they act as exciting causes."

Letter from Dr. Powell to Dr. Gallup on the character of the Diseases of 1810.—"I have received a letter from Truman Powell, M. D., dated Burlington, (Vermont,) August 8, 1810, from which the following is an extract. Speaking of a complaint which had raged in his neighborhood, he says, 'It commenced about the first of January, 1810, and continued to increase until about the first of March, when it seemed to be pretty much on the decline, and disappeared by the first of April, though in some towns farther south, it prevailed much longer, even into June. But those towns were generally exempted from the disease during the winter. The symptoms of this disease were those common to all other pneumonic affections, differing no way but in the degree from a common pleurisy or peripneumony. It generally, among physicians, went by the name of malignant pleurisy, or peripneumony, which seemed to be an appropriate term. It predominated over all other diseases; no person could fall sick without having some pain in the breast, side, or shoulder, with cough and expectoration of a very ill-conditioned matter, resembling what is generally discharged from sores in a state of gangrene; no precursory symptoms were to be observed, whereby the approach of the disease could be known. The seizures were almost instantaneous. Many would get up in the morning and eat a hearty breakfast, and, in thirty minutes, be in the most excruciating pain. It generally finished its course in six or eight days, terminating either in death or a favorable crisis. A few instances occurred where the weight of the inflammation fell upon the throat, in which case it produced a complete angina maligna. A few other cases occurred where the face and limbs were much tumefied and inflamed, in all of which cases the lungs seemed exempted from inflammation. I have been informed by a respectable physician, who lives at the northward, that, in his vicinity, he had a number of cases of spotted fever with the disease above named: but one or two happened in this vicinity. Yet I have no doubt that the spotted fever and the disease above named originate from one

and the same cause, differing no way but in degree and seat of the urgent symptoms. I believe it will be acknowledged by every medical gentleman, that two epidemics diametrically opposite in their natures can never exist at the same time in the same climate, (diseases of specific contagion excepted:) therefore, I conclude, that the malignant pleurisy, which existed in this country last winter, and the spotted fever, which prevailed in sundry parts of New England, have one and the same cause, differing only in degree and seat of the urgent symptoms.'

"The identity of the hurtful principle will not be doubted. It will be conceded, that what constitutes the difference between pneumonia, cynanche trachealis, phrenitis, enteritis, and that peculiar disease called spotted fever, consists in a difference of severity and of local affection, in the part upon which the principal force of the disease may fall. Symptoms are different not only from an affection of different organs, but the identical part of the organ affected. For example: when the bronchial membrane of the lungs is affected, the symptoms are not the same, as when the investing membrane of the lungs is affected, etc.

Disease a unit—personal peculiarity, location, etc., cause the symptoms to vary.—"Hitherto the before mentioned epidemic diseases have been considered, as prevailing altogether in a solitary manner; indeed, it is usual for some one to have the pre-eminence; but it is also frequent for two or more of them to prevail at the same time. By this may be understood, that the epidemic causes, by meeting with personal peculiarity, may affect different organs, and have different symptoms; and consequently have different names attached to them; also the diseases are supposed to be of very different diatheses, when it is only another variety of the same disease.

"It is common to see dysentery, and those fevers called bilious, prevailing at the same time; or it may be such, as are denominated typhus, etc. It is very frequently the fact, that when common fevers prevail of any kind, many will have the disease, which is called colic, or what many suppose to be colic, although the intestines are pervious.

"It is common for pleurisy, phrenitis, croup, typhus, and

even mania, to prevail at the same time. Numerous remarks of a similar nature might be added of diseases prevailing at one and the same time, of supposed different diatheses, when in fact, it is nothing more than this, that the disease falls with greater force on some *other* organ than usual.

"These facts are of infinite importance to the practitioner, and might be so to the nosologist. They teach the former that all epidemic diseases are of one family, and nearly allied to each other; and that the principal difference consists in a difference of certain symptoms, which entirely depend upon the locality of the disease; and however necessary it may be to bestow particular attention upon these, in certain varieties, yet the general state of diseased action is very similar, and to be relieved by the same general remedies.

"The nosologist may reflect on the danger of substituting names for essences; and the folly of establishing fixed characters to the mutability of diseased action, not comporting with the physiognomy of the case at the bed-side of the patient."—*Gallup on Epidemics*, pp. 59 and 161.

Now who does not see that here is embodied our doctrine of the *unity of primary pathology?* the supposed differing diatheses are but varieties of the same disease. Also the doctrine of Hippocrates of the *unity of disease, differing by reason of location?* the cause falls on this or that organ with greatest force, and the phenomena, of course, differ. The "personal peculiarities" amount to pretty nearly the same thing as the inherent differences of subjects we speak of.

The great reason why everybody has supposed there were numerous diatheses, is this, nobody has shown the *origin* of any one, the *primary pathology*, or the *first link* in the morbid chain. Our philosophy reveals this in regard to the disease called scurvy, and shows it to be the *platform of all disease*—a want of the pabulum of life and health, nutrition. No diseases can begin where nutrition is perfect, and whenever it becomes imperfect, the sum of that imperfection is so much scorbutus. The natural vital stimuli, *food*, *air*, and *warmth*, when perfect, maintain health, because the nutritive function goes on happily; but if the elements of nutrition are wanting in the food, or the air is so cold the capillary circu-

lation is impeded by contraction, or so hot it is impeded by congestion, and the *debris* of the system is not exonerated, scorbutus begins. Now we think this is the truth, and a great truth, the greatest truth that has ever been revealed in medicine. We think the laws of all epidemics, whether illustrated by Hippocrates, or Galen, or Sydenham, or Gallup, or Webster, or our humble self, go to prove that our views are correct—that the reason why they prevail is because of the inlaid scorbutic taint, and that this explains why all dis eases conform to the dominant type. Why there happens to be a dominant type, Gallup and Hippocrates both explain to some extent, viz.: the force of the cause falling on a particu lar organ. We shall have occasion to recur to this in commenting on some of the different authors on scurvy before we finish. Whether we shall make the subject perfectly clear, remains to be seen.

Lind on the Laws of Epidemics.—Lind says in his great work on Scurvy, 3d. ed. p. 110. "The next thing observable here is, that whatever diseases are epidemical at the same time with the scurvy, or even whatever intercurrent diseases prevail, *these scorbutical habits are very liable to be seized with:* and this sometimes happens when such distempers would appear [appearances are often erroneous] to be of a pretty opposite genus to the scurvy. But, on the contrary, if the prevailing distempers are of a putrid nature, such as the small-pox, measles, dysenteric fever, etc., [of like genus to the scurvy,] it is then that, *coöperating with the scorbutic accrimony*, they produce the most fatal and malignant symptoms."

Who does not perceive by this the full explanation of Sydenham's law—how the masked despot, king scurvy, swallowed up all his subjects, the lesser diseases, even to the malignant fever, which differed from it only in violence? Every yellow fever epidemic in the United States tells the same story, cholera the same, etc., showing the true pathology to be the scorbutic diathesis.

Dr. John Buckler, Jr., of Baltimore, informs us by word of mouth, that, a few years since, he attended two hundred cholera patients in an hospital of that city, during an epidemic visitation of this terrible pestilence, and *every patient* who survived

the choleric passion, had the scurvy! We observed the same thing at Pittsburg in 1854; and Mr. Thom observed the same thing in India in 1848. Where did all these subjects, to a man, get the scurvy, a slow disease, in twenty-four hours, or, say, as well, twenty minutes? for when cholera stopped the scurvy was fully formed. Our philosophy shows the absurdity of *calling* a group of symptoms a disease, and explains those mysterious phenomena. All is reasonable, rational and comprehensible, tested by the new doctrine. When the reader shall have examined the views of the old authors, and the laws of the epidemic manifestation of scurvy in full, he will find our generalization doctrine the only possible way of satisfying a reasoning mind on the subject. We will make a few more quotations, however, to illustrate the matter in this technical connection, for fear we may not find so favorable a moment to enforce the law of the relation of the constitution of the seasons to epidemic scurvy.

Extracts from Mr. Ives's Journal at Sea—Lind.—The general idea is, that scurvy is a winter and early spring disease. The old-fashioned, non-febrile, chronic form, with gum and leg symptoms, and costive bowels, does prevail more then: but our essays show that the devastating epidemic manifestations of it occur in summer and autumn. At sea, the meteoric exciting or developing causes are not so intense in summer, as on land, because there is no upward radiation of heat at night; the sea is colder than the air. Still chronic epidemic scurvy breaks out in summer and autumn at sea, though scorbutic dysenteries, diarrhœas and fevers more prevail. Mr. Ives' says, (Lind, p. 97,) "On the 11th of February, 1744, the day we engaged the combined fleets of France and Spain, we had not above four or five but what were at their fighting quarters. * * * On the 15th my list stood thus: Recovering from the scurvy 30. Scorbutic complaints in the first stage 5. Bad in the scurvy 4. Pleurisy 1. Flux 1. Lumbagines 3. Agues 2. Coughs and colds 11. Sick in all 61." At the end of the month, all the sick were put into hospital at Mahon. March was cold and rainy; "five or six scorbutic men who had coughs, are now in deep consumptions; towards the last of the month coughs and slight fevers pre-

vailed." In April and May inflammations and fevers prevailed; June July and August mild diarrhœas and dysenteries. September, "now and then a scorbutic complaint." October, a rough and rainy month. "We were much alarmed at the sudden appearance of the scurvy. On the 13th I put on shore 24. We left Gibralter the 14th, and when we came the length of Minorca, having no orders to proceed further, I sent 20 in scurvy also to Mahon hospital. * * * We arrived at Vado 20 Nov., and upon our arrival there we had 50 men in the scurvy." Quite an autumnal epidemic.

Extract from Ronsseus, who wrote in 1564—*Lind.*—Ronsseus says, (*Lind*, p. 308.) "In 1562, after a very rainy season in Holland, frequent and very troublesome scurvies ensued; so that although this malady was at all times endemic, yet upon very slight occasions, it often became more general or epidemical during a moist season. It usually prevailed most in spring and autumn; was milder in the spring, and shorter; but in the autumn, it was of longer continuance, and more obstinate." Very like our epidemics.

Extract from Vander Mye—Lind.—Vander Mye says, speaking of the breaking out of scurvy in the city of Breda when besieged by the Spaniards in 1627, "The preceding summer being very warm and dry, [Webster says very hot,] produced ardent fevers. * * * Soon after, the plague was brought hither by infection from Holland. [Webster says it prevailed in France and many other parts, especially Augsburg after a famine.] In the autumn the weather was cloudy and rainy, the winter wet and open, * * * in the end of winter a short frost came on, and put an entire stop to the plague. * * * *Scarcity of provisions* increasing in the town * * * added to a damp, cloudy, rainy equinox, produced a new calamity. The appearance of livid spots on the body occasioned at first a general consternation. The surgeons who were ignorant, declared the plague to have broken out again; but upon a closer examination, it was found to be the scurvy. *This disease seemed to absorb all others*; so that for six weeks there was no talk of any other malady in the town. The calamity became great and universal; few escaped it;" etc. * *

In May and June it was all changed to fluxes either watery or bloody, that is, choleras and dysenteries, but still called scurvy; and in July it became the true plague, when the town capitulated. Their food was spoiled rye, rotten cheese, dried fish, dogs, and horse-flesh.

We deem it unnecessary to pursue our illustrations further. The laws of epidemic scurvy are precisely the same as of plague, yellow fever, cholera, etc. Until, therefore, some other cause of pestilence is revealed than the causes known to inlay scurvy, we hold it sensible to believe it all in essence a unit.

Webster on the Laws of Epidemics.—In our essay on cholera infantum, we quoted from Malte Brun a brief paragraph giving a chronological statement of the ten greatest epidemics of London; and in the same connection a paragraph from the Medico-Chirurg. Review, stating that M. Broussais considered cholera identical with the black plague or English sweating sickness of the fifteenth century, that spread all over the world. We stated in our comment, that we had not medical historical data sufficient to enable us to decide as to the identity of cholera and the sweating sickness. This shows two things worthy of mention. The first is, Broussais's generalization of these great plagues; and the second is, the fact that at the time we wrote that essay we had not arrived at the full conviction that all disease sprang from the same root. We stated that the constitution of the seasons immediately preceding those epidemics should throw light on the subject, and was an interesting inquiry. We were not aware at that time that Webster had gone into researches on this point, and produced a remarkable book, giving an account of all the famines and pestilences in the world's history, it would seem. Now, the careful examination of this work, and our own bedside and meteorological observations—our experience as a practitioner during thirty years, together with the researches we have made in the preparation of this work—have established our convictions of the truth of a one primary pathology. We have drawn our conclusions from the flood of evidence that has poured in upon us, and not from any pre-conceived notions. This assertion should, at least, propitiate any dis-

position in any cultivator of medical science to be censorious. Every argument, every deduction drawn from established facts in medicine, every effort, as humble even as ours, honestly exerted, to advance the common interests of mankind, is entitled to respect: however novel, however innovating, matters not.

We stated in the appendix to our essay on cholera, that blights in vegetation preceded and attended it, and quoted the English journals in proof. Our view therein set forth, is, that extraordinary seasons, or a succession of blighting years so abridge and deteriorate the quality of the productions of the earth, that not only the human race, but cattle and fishes fall a prey to the scarcity and indifferent quality of the food and fruits of the earth; all fall under the evil of defective alimentation. Extreme meteoric impressions *develop* pestilence. This is the position we hold. We stated there, also, that Webster, whose work we had then procured, held that blights in vegetation, sickness in animals and fishes, and epidemics in the human race were all owing to some unknown, mysterious, common cause, as the influence of comets, etc. This we dissented from as unphilosophic. He should first establish the premise that, this some unknown, mysterious cause, as a comet, or rather the *absence* of a comet, produces the harvests of the earth; before he may assume that the *coming* of a comet destroys them. The absence of a comet is not the vital stimulus of vegetation, of man, of animals, or of fishes; then how should the *appearance* of one in this part of the universe, so upset and destroy everything and everybody? The judgments of an offended God as cause, is more sensible, and this is utterly preposterous. This mysterious cause, then, which Webster honors, is the "occult qualities of the air," that Sydenham and others have paid homage to, grown up to giant stature, or mammoth proportions in Webster's mind, for he makes it to cause earthquakes, inundations, irruptions of volcanoes, meteors, cold winters, hot summers, and everything else calamitous or remarkable. Now we have never thought to fathom the ultimate; to show the cause of heat, or of atmospheric air, or of water, or how they cause vegetation to grow out of the earth, and furnish food. We do not

ascribe it to some unknown, mysterious cause, however, but to the power and pleasure of Deity, or necessary obedience to natural laws. Neither do we seek to inquire the cause of the infinite variableness of the seasons and unpropitious constitution of remarkable years; why a given series of years shall be even, productive and salubrious, and another series tumultuous, blighting, and pestilential. This is the established order of Nature. These are the laws under which we live, and by which we die—the data from the study of which we must reason out the causes of pestilence. The true starting point, then, is to see and understand what are the causes of life and health, find the vital stimuli, food, air, and heat, and take note of the grand experiments of their defects—abridgment, and extreme impressions—as presented in extraordinary years, famines, and the consequences. This is the course we started on, and the course we shall pursue; and with this explanation of how and wherein we differ from Webster, we proceed to draw from his valuable but unappreciated work, very remarkable confirmation of the truth of the new philosophy of disease our researches unfold.

A few particulars by way of premising—Domestic origin of Epidemics.—Webster holds to the domestic origin of pestilence, and in this he is undoubtedly correct; though, *secondarily*, diseases become infectious or contagious, no doubt. The small-pox, which he justly holds originates de novo during every pestilential period, is capable of propagating a like condition in others, especially when predisposed—when they have the primary pathology inlaid. In this way, various forms of pestilence may be spread, and upon the theory of disease we have suggested, the laws of the origin, and development, and infectious propagation of its malignant forms are plain and easily understood. This ex-explains why quarantines, and cordons sanitaire, have ever been ineffectual in preventing the progress of disease during a pestilential period, that is, after or during blights, dearths, and famines. It explains, too, the reason why, out of a given number exposed, say to small-pox, some escape attack; their systems being too free from the primary pathological state of predisposition. It explains the law of the pathological

similarity of the forms of disease also, viz.: the nutritive function being impaired after a certain manner, the effete matter of the exudated effluvia inhaled by another under the common condition of predisposition, a further impairment of nutrition in kind goes on in such person called *incubation*, and similar phenomena are finally aroused. It explains, too, why during a raging epidemic, all diseases put on its livery; and why there is an intercurrence, blending, and change of form occasionally; and why disease responds to remedies, and the patient gets well sometimes; the nutritive function being favorably addressed, happily assisted.

The Longitudinal Progression of Epidemics.—It will be observed that Webster holds to the longitudinal progressiveness of epidemics westwardly, and also to the longitudinal progressiveness westwardly of cold—unpropitious seasons. Now, if it be a law that cold, frosts and blights—hard and severe winters, blighting springs, and summers of extraordinary heat and drought progress round the world westwardly, as the observations seem to establish, then, on our theory, epidemics should progress thus also; which conforms to the progressiveness epidemic cholera has twice exhibited in our day. This according to Webster, was the case in the most general and awful pestilence in the world's history, which commenced in about 1345, in China, and swept westwardly, year after year, until it finally spent itself on the western coast of Europe, as far as the known world then extended, in 1349—'50, after a series of wet, blighting years, alternating with droughts, etc. Since the settlement of America the statistics show that all the great plagues have obeyed this law; and according to Webster if the extraordinary influences open or begin on this continent, they continue westwardly and reach Europe via Asia, the epidemics following in the same direction. The law that produces this progression of meteoric phenomena westwardly, is as yet, as inexplicable as that which governs the currents of the ocean; but the progression is as well attested as the progression of epidemics, which follow after. Now, is it not rational to infer that the disastrous years by blighting the fruits and

crops produce the epidemics? We think so; the cause is adequate, and we do not see how a comet could do it.

The Latitudinal Progression of Epidemics.—Epidemics are observed to have a latitudinal progression also, but sometimes northwardly and sometimes southwardly. Webster, does not undertake to account for this; neither has the law been discovered, if our theory does not explain it.

We say epidemics are inlaid, under defective nourishment, and developed by the changes of seasons or the force and ardency of meteoric impressions.

The local climates; the state of the crops and fruits; the topography, exposure, elevation or depression; the rains, snows, frosts, droughts, and thermometric influences governing a locality, and the seasons, crops and fruits, determine the whole matter. This affords a key that explains the *latitudinal* law of the progression of epidemics northwardly or southwardly, and why a town is skipped one year and visited the next; why, even a portion of a city is visited with severity and another part escapes; as well as other vagaries, these things are not the result of chance, neither are they special providences, but are reducible to law, unquestionably.

The laws of meteorology are but very imperfectly understood Why there should be an inveterate drought in Texas and a superabundance of rain in Illinois, or vice versa, the same season, is, as yet an inexplicable coincidence. Why the crops and fruits should fail in the southern states this year, in the middle states next year, and in the northern states the third, or vice versa—why the meteorological conditions causing poor crops should so turn up—why unpropitious cropping years should cluster or form a group or series, extending for an indefinite number of years, as we shall presently see, are facts as yet unexplained. But the progression of epidemics depends on these phenomena. The nutritive energies of a nation, of a hemisphere, yea, of the world, may be thus let down serially, the scorbutic diathesis universally induced, and then epidemics will break out according to the intensity or grade of the latent evil, and the intensity of the exciting influences, the most potent of which is summer heat. By this law the yellow fever has reached the State of Maine,

and cholera the island of Barbados, the former apparently progressing northwardly and the latter southwardly. This explains the latitudinal progression of epidemics.

Pestilential period from 1596 *to* 1602, *according to Webster.* —"In 1594 was a severe winter. The years 1594–'95 and '6 were very rainy in England and Germany. Crops failed, and in Hungary the famine was extreme. * * In 1596 and '7 prevailed in Cologne, Westphalia and other parts of Germany, a singular disease, which authors ascribe to the famine which had preceded. It was a malignant fever, which was attended with convulsions and raving madness or delirium. * * In 1597 appeared a comet, and the same year the catarrh was again epidemic. Malignant fevers, accompanied with worms in youth, were predominant also, and the plague was in Juliers and Geneva. A dearth in England. The winter of 1597 was severe, as was that of 1599. The summers of 1598 and '99 were remarkably dry, and swarms of fleas, gnats and flies abounded. Tertians, with petechiæ, were frequent, and continual fevers which yielded to bleeding and purging, or went off with a bilious diarrhœa.—Small-pox and measles were also epidemic."

This justifies our conclusions that small-pox originates de novo from blights and dearths.

"These diseases, as usual, were the precursors of a very distressing plague, which, in the autumn of 1598, raged in London, Litchfield, Leicester and other places in England. It even broke out in the small towns in Wales and the northern counties, as in Kendal in Cumberland, where died 2,500—in Richmond, where died 2,200—at Carlisle which lost 1,196 inhabitants; and at Percrith which lost 2,266.—(*See Camden's Britannia.*) In 1598 Pegu, in Asia, was depopulated by famine, and Constantinople was almost stripped of its inhabitants by the plague. Seventeen princesses, sisters of the Sultan, Mahomet III., died in one day. * * In Italy an inundation of the Tyber injured Rome. In 1599 the spring was cold and dry; the summer hot and rainy, with great floods. A very mortal distemper raged among cattle in Italy. In Spain and Lisbon died 70,000 people of the plague. In some places a fatal dysentery prevailed.—(*Short*, vol. i.—*Sims on Epid.*) The

year 1600 was remarkable for pestilence in almost every part of Europe. Spain, where the disease was fatal the year before, was this year almost depopulated. There raged throughout Europe a pestilential, mortal colic, which destroyed the lives of all whom it seized, within four days. * * The winter of 1600 was very cold. In the summer of 1601 there was a severe drought of four or five months; and a violent dysentery followed, with double tertians and continual fevers. The plague raged in Portugal. * * In 1602, a cold and dry summer and winter, the catarrh was epidemic, and acute fevers prevalent.

"These diseases and phenomena accompanied a series of calamities in all parts of Europe. The famine that marked this period, for a series of years, exceeded in extent and severity, what had been before recorded. Famines are usually local; but in the present instance, there was a failure of crops for several years, in almost every part of Europe; while the plague committed most desolating ravages. In Muscovy the famine raged for three years at the beginning of the century under consideration, attended with the plague. Parents devoured their dying children; cats, rats and every unclean thing was used to sustain life. All the ties of nature and morality were disregarded; human flesh was exposed to sale in the open market. The more powerful seized their neighbors; fathers and mothers, their children; husbands, their wives, and offered them for sale. Multitudes of dead were found, with their mouths filled with straw, and the most filthy substances. Five hundred thousand persons were supposed to perish in Muscovy, by famine and pestilence. At the same time, the famine in Livonia, and the cold winter of 1602, destroyed 30,000 lives. The dead bodies lay in the streets, for want of hands to bury them.—(*Thuanus*, lib. 135.—*Encyclopedia*, art. *Russia*.) At the same time, raged a most dreadful pestilence in Constantinople. In England, there was also a dearth, and in 1603 perished 36,000 in London, of the plague, which was said to be imported from Ostend.—(*Maitland's Hist. Lond.—Mignot's Hist. Turkish Empire*, p. 256.) * * It is idle to ascribe the plague to infection, communicated from person to person, or from clothes to persons. The disease, in 1602,

was in every part of Europe, and appeared nearly at the same time, in the most distant parts. In this case, as in those before related, of 1580 and 1591, it had been preceded by catarrh, and a course of malignant fevers. The malignity of the disease in 1602 resembled that of 1348—persons were seized with spitting of blood, and died in three days."—(*Webster on Pestilence*, vol. i. pp. 169 to 172.)

Any person who cannot see that extraordinary seasons produced these mortal plagues, by abridging the production of food, thus inlaying scorbutus, the natural consequence, and that accidental, inherent, and surrounding circumstances caused the epiphenomena to differ, must be remarkably obtuse.

Pestilential period of 1633 *to* 1643.—"In 1633 appeared a comet, which was followed by a severe winter. The same winter in America was mild, says Winthrop, p. 61. Southerly winds prevailed till the close of winter, when there were great snows. It is very common that *severe cold is progressive, happening in Europe one year before it does in America* as will hereafter appear. London was shaken by an earthquake, and at Halifax in Yorkshire raged a very malignant fever. In this year also a "pestilent fever" invaded the little colony at Plymouth, in Massachusetts, and carried off twenty of their number. * * At the same time, the Indians were invaded by the small-pox, which swept them away in multitudes. The summer of this year was remarkable for innumerable large flies, of the size of bees, which made the woods resound with a humming noise.—(*Hubbard's MS.* p. 131—*Winthrop's Journal*, 51, 56, 59, 61.) * * The same species of diseases appeared, at the same time, in Augsburg, Dresden, London, and in America. Probably the same species prevailed over most of Europe; for we hear of them in every part of Holland in the following year. The diseases predominant, previous to the plague, are of the eruptive kind: such was the case in the present instance. In America, the epidemic among the Indians took the form of the small-pox; and although it is the current opinion that the small-pox is communicated only by contagion, yet my investigations have satisfied me that this is a great error. The small-pox is one of the *family of eruptive diseases*, which belong to almost every pestilential period. Before its

origin and progress had been affected by the art of innoculation, it used to be epidemic, in large cities, under that inflammatory condition of the atmosphere, which originated measles, influenza, anginas and plague, and *rarely or never at any other time.* This disease, therefore, though communicable at any time by infection, *is generated in particular habits without any infecting cause ab extra.* * * In 1634 the plague showed itself at Ratisbon. The summer in America was hotter than usual, and the following winter was very cold. In 1635 the plague appeared in Leyden, and 20,000 inhabitants perished. * * * In London it prevailed in 1636 after a regular increase of previous malignity in diseases. * * In 1635 when the plague appeared in Leyden, the malignant diseases, its precursors, appeared in various parts of Holland. In Nimeguen, these precursors were measles, smallpox, dysenteries of the worst type, but especially the spotted fever. The malignity of this fever increased, until it *changed into the real plague.* * * * This period of disease was also experienced in Virginia, where, says Winthrop, died 1800 people in the year 1635. The plague continued to infest London, without interruption, from 1636 to 1648; see the bills of mortality; but it was not epidemic, nor very fatal. In 1640 a hard winter, and epidemic pleurisies were fatal in Europe. The following year, a malignant fever was epidemic, in England, and other countries. * * This summer of 1641 [in America] was remarkably wet and cold, so that a great part of the corn did not come to maturity. * * The following winter was the most severe that had been known for 40 years. The bay at Boston was frozen so that teams and loads passed to the town from the neighboring islands. The snow was deep, and Chesapeake bay was nearly frozen. At Boston, the ice extended to sea, as far as the eye could reach. The following spring 1642 was early, but wet. * * The very wet weather of the last year produced a dearth of corn in Boston, in the spring of 1643. * * One fact in the foregoing account deserves notice; *the extreme winter in America was in* 1641–'2, *one year later than in Europe.* Several instances have occurred in other periods, which seem to indicate a kind of progressiveness in great cold from east to west.

It often happens however that the winter is severe at the same time, in both hemispheres, as in 1607 '8—1683 '4—1762 '3—1779 '80. In England, in 1643 a malignant fever was epidemic and few escaped.—(*Op. cit.* pp. 182–187.)

If the extreme impressions of heat and cold move from east to west, why should not disease also? This with the difference of local climates and diet is the source of the apparent march and vagaries of epidemics.

Pestilential period of 1652—'56.—"The years, 1652 and '3 were remarkably dry in England, and in 1654 public thanks were ordered for a supply of rain.—(*Mercurius Politicus.*) In 1654 the plague made its appearance in Denmark. Some severe epidemic had prevailed in New England; for in the spring of 1654 a general fast was appointed by the government of Connecticut, one reason assigned for which was, 'the mortality which had been among the people of Massachusetts.' What the disease was, I am not informed.—(*Trum. Hist. Con.* 222.) In 1655 occurred the second epidemic catarrh, recorded in the Annals of America. * * It was so epidemical, that few persons escaped. It began about the end of June. * * Of the seasons in America I have no account; but in Europe the winter of 1654 '5 was extremely severe. The rivers and harbors in Holland were all made fast with ice; a series of snow storms took place in April, and as late as the 19th there was a severe frost at Brussels.—(*See Mercurius Politicus, a London paper for* 1655.) In March 1655 was an eruption of Vesuvius. It was very sickly in the north of England; and there were great tempests of wind and hail in 1654 and '5. In 1654 the plague appeared at Chester in England; but did not become epidemic, owing, it was supposed, to the precaution of confining the diseased to their houses. At the same time the disease was raging in Turkey, in Presburg, Hungary, and in the city of Moscow, it is alleged, perished 200,000 inhabitants. We have here precise and authentic evidence, that the plague appeared in Chester, in the north-west of England, in Denmark, in Russia, Hungary and Turkey, in the *same season*. To prove this to be the effect of a general principle, we have numberless authorities, in the Gazettes of that and the next year, that malignant

diseases prevailed over Europe. See the paper above cited. Thus when a few cases of plague occurred in Chester, fatal diseases prevailed over the north of England. And it is remarkable in this instance, that the epidemic plague appeared *in the north of Europe before it did in Italy*—an exception to the general course of that disease. In 1655 the plague was more general in Europe. It prevailed in Sardinia, Malta, Leyden, Amsterdam, and in Riga, a Russian port at the mouth of the Dwina. There died in Riga 9,000—Amsterdam 13,200—Leyden 13,000. In 1656 the same disease invaded Naples, Rome, Genoa, Candia, Benevento, and most parts of the Neapolitan territories. In the city of Naples, perished three-fourths of the inhabitants, and in Benevento, a greater proportion. The numbers of deaths were estimated as follows :—In the city of Naples died 240,000—survived 50,000. In the Neapolitan territories 400,000. In Benevento died 9,000—survived 500. In Rome about 10,000. In Genoa in 1656, 10,000, and in 1657, 70,000, and 14,000 only survived. In Riga 9,000. In Thorn 8,200. * * The summer of 1656 was hot."—(*Op. cit.* vol. i. pp. 189–90.)

Epidemics appear to travel from east to west, from north to south, and vice versa, but really only break out according to the laws that inlay and develop scorbutus.

Pestilential period of 1696 *to* '99.—"The year 1696 was cool and wet—summer in Britain, resembled winter, and winter was like summer. Corn was mildewed. Dysentery fatal among children. In America the winter of 1696 '7, according to Hutchinson, was very severe. Loaded sleds passed from Boston to Nantasket. Food was scarce, and losses at sea very great. * * In 1697 the weather in Europe was mostly cool. * * I have a particular description of an influenza that prevailed in America in the severe winter of 1697 '8, This catarrh began in November and prevailed till February. Its violence was in January, when whole families were sick at once, and whole towns were seized nearly at the same time. It appears to have been an epidemic of the severe kind; and the epidemics which followed it in America were of correspondent severity. In the same winter a mortal disease raged in the town of Fairfield in Connecticut, which was

so general, that well persons could scarcely be found to tend the sick and bury the dead. Seventy persons were buried in three months, although it may be doubted whether the town then contained 1000 inhabitants.—(*MS. letter from Dr. Trumbull.*) In the same winter raged a deadly fever in the town of Dover, in New Hampshire.—(*MS. of the Rev. John Pike.*) This disease was doubtless that species of inflammatory fever, attacking the brain and ending in typhus, which has often proved a terrible scourge to particular parts of America, during the rage of pestilence in the east, and of other epidemics in this country. We shall hear of it in the following century, and especially in 1761. * * The malignant fever already mentioned, whatever might have been its precise symptoms, was soon followed by more general sickness. In 1699 raged in Charleston, South Carolina, and in Philadelphia, the most deadly bilious plague that probably ever affected the people of this country. Mr. Norris, of Philadelphia, has kindly favored me with a sight of a number of MS. letters of his grand-father, Isaac Norris, written during the sickness, to his correspondents. This worthy gentleman was then in trade, and well acquainted with the facts respecting the disease, as his own family suffered a loss of several of its members. In a letter dated August 15th, 1699, he mentions, that a malignant fever broke out about the beginning of August, which he describes as the 'Barbadoes distemper,' though he gives no intimations of its being communicated from countries abroad by infection. He says, the patients 'vomited and voided blood.' [Positive evidences of Scorbutus.] On the 24th of August, arrived the Britannia from Liverpool, which had been 13 weeks on her passage; she had 200 passengers on board—had lost fifty by death, and others were sickly. September 1st, he writes that the distemper appeared to abate at one time, but afterwards revived. He mentions the summer to be the hottest he ever knew; men died at harvest in the field. All business in the city was suspended." (*Op. cit.* vol. i. p. 109–11.)

This is the supposed first appearance of the yellow fever in the United States; but Webster shows that it raged in New

England before the Plymouth colony arrived—in 1618–'19, and '20, nearly exterminating the Indians in New England.

Pestilential period of 1740 *to* '44.—"A comet was seen in 1739, and the winter following in Europe was the severest known since 1716, or perhaps since 1709. The cold continued till June, and was succeeded by a dry season; then a wet, cold autumn. A dearth succeeded in Scotland, and measles spread over America. In England spread the whooping cough in December, 1740. The small-pox prevailed, and in 1741, that disease, and the spotted fever, were very mortal. (*See the London bills of mortality.*)—In Bristol and Galway, in Ireland, the fevers fell little short of the plague.—(*Huxham*, vol. ii.—*Short*, vol. ii.) It was computed that in 1740 and '41, Ireland lost 80,000 people by famine, dysentery, and spotted fever.—(*Rogers on Epid.*) Amsterdam experienced the same pestilential constitution.—(*See the bills.*) Not less remarkable were the seasons in America. In 1740–'41, a year later than in Europe, the winter was of the severest kind. Many cattle perished for want of food.—(*Journal of N. York Assembly*, vol. i. 799, 804.) During this winter measles prevailed in Connecticut. The American plague appeared in Philadelphia and Virginia. In Scotland many perished by famine.—(*Sinclair's Scot.* vol. vi. 433.) Don Ulloa relates an opinion among the Spaniards in South America, that in 1740, the black vomit was first introduced into Guayaquil by the galleons from the South Seas. * * In 1742, the ulcerous sore throat of a malignant kind appeared in England, and continued to prevail more or less for many years, and in 1745 became very infectious.—(*See Short*, vol. ii., *and Fothergill's Works.*) The summer of 1742 in England was dry. In America, the same angina prevailed in 1742. From 1740 to 1744, pestilential diseases prevailed in all parts of the known world." (*Op. cit.* vol. i. p. 236.)

Lord Anson circumnavigated the world during this pestilential period, and lost most of his crews of scurvy. Bisset was surgeon of the British squadron in the West Indies, and describes the yellow fever as a hot scurvy. This view unfolds its cause and true nature, no doubt. Any one who contemplates the constitution of the seasons of this pes-

tilential period, cannot fail to see the grand cause of all disease—want of the requisite food; want of nutrition. During such cold, wet, and hot, dry seasons, alternating, vegetables and fruits are good for nothing: they contain none of the salts and finely elaborated principles of nutrition.

Pestilential period of 1759 *to* '63.—We omit the constitution and phenomena of the first years of the series, and give those of the climax only.

"In 1762 appeared a comet, and in America the heat and drought exceeded what was ever before known. From June to September 22d, there was scarcely a drop of rain, almost all springs were exhausted, and the distress occasioned by the want of water was extreme. The forest trees appeared as if scorched. The winter following was equally remarkable for severity, both in Europe and America. The Thames was a common highway for carriages, and the poor perished in the streets of London.—(*Lond. Mag.* 1763.—*Annual Register*, 1762.) In America the snow fell on the 8th of November and continued till about the 20th of March. * * In the extremely hot summer of 1762, the bilious plague prevailed in Philadelphia. The same disease swept away most of the troops in the expedition to Havana. The plague raged in Constantinople and in Syria; while the yellow fever spread mortality in Bengal. In this year the plague in Aleppo came to its crisis. In 1760, died about 500 persons; in 1761, 7,000, and in 1762, 11,000, after which year it subsided.—(*See Patrick Russel, Hist. of that plague.*) The bills of mortality will best show how severely the principles of disease were felt in London, Amsterdam and Dublin in 1762 and '3. No part of the earth seems to have escaped a share of unusual mortality in the period between 1759 and 1763. In the latter year, the bilious plague in Bengal carried off 800 Europeans and 30,000 natives. Lind, p. 82"–(*Op. cit.* vol. i. p. 251.)

To ascribe sickness to any cause but impairment of the nutritive function seems to us ridiculous. If the storms, the frosts, the droughts, the blights, be owing to comets, all right. It does not militate against our position, and we are happy to know the use of comets. During this pestilential

period Lind made his observations in Haslar Hospital, the foundation of the supplemental papers and postscript to his work on Scurvy 3d ed., in which, as will appear hereafter, he has to admit that all diseases are clothed with scurvy.

Constitution of the years 1779 '80 *and* '81.—"In the beginning of the winter succeeding 1778, there occurred some cold weather; but the latter part was the mildest ever known. In February 1779, many people along the river Connecticut plowed their fields; and in Pennsylvania the peach blossomed. The summer succeeding was one of the healthiest ever known in America [mark]. * * * The winter following was, in America, the severest that had been known since 1741. From Nov. 25th to the middle of March, the cold was severe and almost uninterrupted. * * * Not only all the rivers, but the harbors and bays in the United States, as far southward as Virginia, were fast bound with ice. Loaded sleds passed from Staten Island to New York; Long Island Sound was frozen into a solid highway, where it is several miles in breadth. Chesapeake bay at Annapolis, where the breadth is five and a half miles, sustained also loaded carriages. * * The snow was nearly four feet deep, in Atlantic America, for at least three months. The winter was severe in Europe also: and on the 14th of January, the mercury at Glasgow fell to 46 below zero. * * * The plague broke out in Smyrna in the spring of 1780, but I have no acconnt of its progress.

"The spring was cool and dry, and catarrhous complaints were prevalent among children, says Dr. Rush, vol. i. 123. The summer following was hot, and a bilious remittent was epidemic in Philadelphia, accompanied with such acute pains in the back, hips and neck, as to obtain the name of the *break-bone-fever*. * * * The winter of 1780 '81 exhibited nothing worthy of particular notice. In the spring of 1781 prevailed the influenza, or epidemic catarrh. It began with a severe pain in the head, prostration of strength, coldness and chills, the pulse not quick nor tense. The pain in the head lasted about twenty-four hours, and was succeeded by a pain in the side, not pointed nor acute, extending to the hips, accompanied with a soreness, and resembling a rheumatic pain. The cough was troublesome, full, and the matter

discharged of a glandular kind, not well concocted. Respiration was difficult, and a considerable defluxion on the lungs. In a few cases, the disorder terminated in seven or eight days; but usually not till the thirteenth or fourteenth; although the patient was seldom confined to his bed. The disease left a soreness and weakness in the side, which continued after the strength was recovered. Venesection had little effect on the pain in the side. Epispastics applied to the part gave relief. The disorder was seldom fatal, but its effect were very visible in the multiplied cases of pulmonary consumption, in the following year.—(*MS. letter from Dr. Tufts.*) 'In the summer following no particular phenomena occurred; the elements were in their usual state, so far as my information extends; and in general the country enjoyed good health. A malignant fever prevailed, in some degree, in New York, but excited no great alarm. One year after this influenza in America, the same disease pervaded the eastern hemisphere. Its progress was from Siberia and Tartary westward; and it reached Europe in April and May 1782: I have no account of its course in America, but it seems to be probable, that it took its direction from America westward, and passing the Pacific in high northern latitudes, invaded Asia and Europe from the east. This must have been the case, if the epidemic in Europe was a continuation of that in America. For an account of this epidemic, see the publications of that year." —(*Op. cit.* vol. i. p. 265.)

This one cold winter in the midst of health and plenty, did not produce a severe epidemic, but still the break-bone-fever is but a step short of the yellow fever. The constitution of the previous and following years being remarkably good, prevented great pestilence. This progressiveness of the *causes*, etc., of *diseases*, westwardly around the world is a curious matter.

'*Pestilential period from* 1790 *to* 1799—*Yellow Fever Epidemics.*—" The winter of 1787 '8 was colder than usual in America. * * * The summer following was remarkably tempestuous. * * * This summer in America was very rainy. * * The thermometer on one day in July rose to 103 in Columbia College in New York. * * * The

winter of 1788 '9 was colder than usual in the United States. On the morning of the 2d of February, the mercury in Farenheit fell to 28° below cypher; 4 degrees lower than had before been observed in Hartford.—(*Courant, Feb.* 2, 1789, *and* 9*th.*) In Europe, the winter appears to have been unusually severe. The frost penetrated to the southern parts of Spain and Portugal; and the rivers in Estremadura and Alantejo were covered with ice. The Pyrenees were involved in deep snow in March.—(*Courant, Aug.* 3, 1789.—*Univ. Mag.* 1789.) It should have been related under the year 1788, that almost all the cod-fish taken on the banks of New Foundland, in that year, were thin and sickly; when dried, they were of a dark or bluish color [scorbutic], little better than skeletons, and not well received in foreign markets. * * * It is true that our crops had been thin, in the preceding year, and the northern states, in the spring of 1789, experienced a dearth, approaching to famine. In Vermont, people were reduced to the necessity of feeding on tad-poles boiled with pea-straw. In one instance four potatoes sold for nine pence. None of the human race were actually starved to death, but a few died of a flux in consequence of bad diet [hear]. Cattle however perished in considerable numbers. Such were the gazette accounts of the day. It is certain that a similar scarcity had not been experienced in America for many years. Whether the failure of crops and the sickly state of the cod-fish marked a derangement of the elements, let the philosopher determine. —(*Courant, June* 15, 1789, *and June* 22*d.*) The spring of 1789 was cold, and vegetation tardy, beyond what could be recollected by the oldest persons living. Part of the summer succeeding was excessively hot. For nine or ten days successively, in August, the heat was above 90°, and in the midst of the day, it rose nearly to 100°. The mean temperature of the summer was however not much above what is usual. Rush, vol. 2. 234. Courant, Aug. 24 and 31. On the 4th of June, ice at Wyoming was as thick as window glass.—(*Courant, June* 22.) The failure of crops in the Carnatic, in 1788, occasioned a severe famine, by which thousands perished in the succeeding year.—(*Courant, April* 27, *and Sept.* 28, 1789.) The hydrophobia showed itself in America

early in 1789. * * In Maryland, the autumn was distinguished by an unexampled mortality among horses.—(*Courant, Dec.* 31, 1789.) In Europe also crops had failed, and England, Holland and France, apprehended the most calamitous effects. In Paris, the cry of *bread, bread,* was everywhere heard, and many riots and mobs marked the distress of the inhabitants.—(*Courant, Oct.* 12, 1789.) The empire of China experienced the same calamity, and the people suffered indescribable distress from famine and disease. In Madras died 30,000 people by famine in 1788. Courant, April 27, 1789. In this instance, crops failed over the whole earth, in the same year. * * * On the 4th of December, arrived at Leith, Capt. Stewart of the ship Brothers, from Archangel, in Russia; who informed that on the coast of Lapland and Norway, he sailed many leagues among multitudes of dead haddock floating on the water. He spoke several ships which also passed among them. * * * * In autumn, 1789, appeared the influenza or epidemic catarrh. The precise time and place of its appearance, are not ascertained. Some accounts say, it originated in Canada. * * Dr. Rush informs me, that it was brought to Philadelphia by the members of Congress, who returned from New York, about the first of October. * * From the middle states, it moved rapidly over the whole country. * * * This disease pervaded the wilderness, and seized the Indians—it spread over the ocean, and attacked seamen a hundred leagues from land. * * It appeared in the West Indies nearly at the time it did in the northern states. It overspread America, from the 15th to the 45th degree of latitude in about six or eight weeks; and how much further it extended, I am not informed. [As the blight was world-wide, probably the influenza was.] It should have been mentioned that, in September, anterior to the invasion of the catarrh, the scarlatina anginosa appeared in Philadelphia; but in October, it yielded to the influenza, the controlling epidemic. The scarlet fever re-appeared in December, and became epidemic; often blending itself with the influenza. It exhibited one predominant feature of the whole series of succeeding epidemics, a prevalence of bilious matter, which was often discharged by purging and vomiting.

This disease continued to prevail in Philadelphia, and if my information is correct, in some parts of New Jersey, till the spring of 1790. The measles occurred in some cases, but was not epidemic.—(*Museum*, vol. vii. 120, 175.) It is remarkable that the scarlatina anginosa was cotemporary in Edinburgh with the epidemic measles in America in 1789, and nearly so, with the death of the haddock on the coast of Norway. It will be observed that the scarlet fever, though epidemic in Philadelphia, did not spread over the country in 1790. It was little known in the northern states, till two years after—this is among the proofs that this disease does not depend on infection for its propagation. * * *

"The winter of 1789 '90 was one of the mildest that is ever known in this country; there being little frost, except for a few days in February. There fell frequent snows, and in great abundance; but they were immediately followed by warm southerly winds, and dissolved. Early in the spring of 1790, we had a second epidemic catarrh. I was attentive to its origin and progress. I found it at Albany in the last week in March, and heard of it in Vermont about the same time. I returned to Hartford, but although exposed repeatedly to its infection on my journey, I was not seized earlier than others in Hartford, where the disease appeared about the middle of April. It spread to the southward, arrived at Philadelphia near the close of that month, and disappeared in that city about the middle of June. In the northern states, as far as my knowledge extends, the disease was more violent than in the preceding autumn. Many plethoric persons of firm habit almost sank under it; while consumptive people and hard drinkers fell its victims.—(*Museum*, vol. viii. 65.) The spring and summer of 1790 were mostly rainy; but otherwise seasonable weather. No remarkable epidemics prevailed, except those already described, but an increase of mortality, in some places, is visible in the registers of deaths. * * * Let it be observed also that the harvest failed, at this time, in China, India, Europe and America. * *

"The winter of 1790 '91 commenced early and with severe weather. The last week in November was cold; Connecticut river at Hartford was closed with ice on the 19th of Decem-

ber, was not open till the 12th of March. On the whole, the season was not of unusual severity. The spring and early part of summer were, in most parts of the country, very dry, until the middle of June. * * * Inflammatory diseases were very frequent during the winter. In Philadelphia the scarlatina anginosa appeared late in January and was very prevalent in February. In the interior of Carolina it was sickly, but I have no particulars. The whooping-cough prevailed in many parts of the country.—(*Courant, Jan* 21, 1790. *See Museum*, vol. ix. 65.) * * * But the most extraordinary phenomenon was the existence of the canker-worm, in numbers before unexampled. Whether these animals had made their appearance in the preceding year or not, I do not recollect. But in 1791 they devoured the orchards over the New England States; and their ravages were repeated in the two following years. Orchards, standing on stiff clay and in low grounds which are wet in spring, escaped; but on every species of light and dry soil, the trees were as dry on the first of June, as on the first of January. Many trees have never recovered from the effects of their ravages. * * The summer of 1791 was excessively hot. At Salem the thermometer was at and above 80° no less than 55 days, and above 90° twelve days—an instance that had not happened in many years, in that cool place; although it often happens in the middle states. * * In autumn, bilious remittents assumed, in Philadelphia, the inflammatory diathesis, so predominant in the last pestilential constitution. Dr. Rush, in his public lectures, mentioned this fact at the time, although he little suspected what effects that constitution was to produce in subsequent years. It was found necessary to bleed from one to three times.[!] In most cases, the liver was affected with all the symptoms of Hepatitis.—(*MS. letter from Dr. Rush.*) At this period the pestilential or epidemic constitution of the atmosphere began to show itself in the infectious yellow fever. It appeared in New York, in autumn, along the east river, and carried off about 200 persons. This gave some alarm, which soon subsided. * * * In the same summer of 1791, the pestilential principle began to exhibit its effects in the increased malignancy of the tropical fevers—

the "unusual epidemic fever" in Grenada, described by Dr. Chisholm, in the Edinburgh Medical Commentaries for 1793. * * * The winter of 1791 '2 was somewhat colder than usual. The month of January was remarkable for severe weather of three weeks duration. * * The spring months were very rainy in the southern states and the islands, which experienced distressing inundations.—(*Courant*, *May* 28, 1792.) In the northern states there was a period of singularly cold weather in the beginning of June, occasioned by a dry N. E. wind. Some persons used fires as late as the tenth day of that month. The heat of the following summer, in general, was not extreme. * * * In the following winter, Egypt was a prey to famine; and the streets of Cairo were filled with dead bodies. * * * In this year, 1792, commenced that scarlatina anginosa which became epidemic, with great mortality. * * * The autumn was one of the mildest ever known. November was so warm that we sat with open windows, at Hartford, on the 19th of the month. This moderate weather was succeeded by severe cold, and Connecticut river was closed by ice on the 10th of December. The latter part of winter however was not very severe, except a week or two in February. * * In the course of this winter and the spring succeeding, the scarlet fever raged in New York, with considerable mortality. It became epidemic also in Philadelphia, in the course of the spring months. Catarrh was very prevalent in the northern states, at the same time; and the small-pox by inoculation at Hartford proved unusually obstinate and fatal; indicating an insalubrious state of the atmosphere. [A scorbutic condition of body rather.] In February 1793 the scarlet fever invaded the town of Bethlem, like "an armed man," says Mr. Backus, Medical Repository, vol. i. 524. He calls the disease angina maligna, and it doubtless put on the symptoms of it in many places. It seized almost every family and child. * * * The same disease appeared in the neighboring district of country and in distant parts, in nearly the same longitude, in the course of this year; but I have not materials for a detail of facts.

The summer of 1793 was excessively hot, after a dry spring, and produced a great number of violent gusts, with rain and

hail. The autumn was very dry. A fatal dysentery prevailed in Georgetown, on the Potomac, and in the vicinity, which swept away many hundreds of the inhabitants. The same disease prevailed in Coventry, in Connecticut, and killed almost every person whom it seized. A nervous or long fever prevailed in Wethersfield. In short, in most parts of the United States, the pestilential principle exhibited its effects, in some form or other, and every where swelled the bills of mortality. It extended to the West Indies, and so violent was the epidemic at Grenada, that the physicians and inhabitants, unable to account for it, really supposed it an imported disease."

Yellow Fever in Philadelphia.—"In August 1793 commenced in Philadelphia that dreadful pestilence which alarmed the United States, and spread terror and dismay over that city. The spring diseases, which ushered in this malady, were influenza, scarlatina and mild bilious remittents. See Rush's Treatise on that fever. These are the most certain and immediate precursors of pestilence, in this country; and the influenza seems to be so, in all countries. During this epidemic, the weather was very sultry and dry. * * * By an account of the deaths in Algiers, kept by Capt. O'Brien, while a prisoner, I perceive that 4893 persons died in 1793 by the measles and plague. There was a considerable increase of mortality in that year; and we observe the measles and plague prevalent in the same year—an evidence that on the Barbary coast, as well as in Europe and America, these epidemics are allied. * * It is remarkable that in the spring of 1793, when the scarlatina anginosa had first commenced its progress in America, it began also in England. It appeared first in the villages about London, and afterwards descended into the city. Med. Mem. vol. 4. It continued to prevail for several years, with different degrees of violence, at different times. See the Monthly Magazines.

"The winter of 1793–'4 was milder than usual in America. * * On the 17th of May was a singularly severe frost in the northern states of America, which destroyed garden vegetables and the leaves of trees. The wheat, oats and flax in many places turned yellow, and fruit was destroyed. * * *

The summer of 1794 was, on the whole, not intemperate. We had hot weather, but frequently was the earth refreshed by showers, and cool westerly winds. The whooping-cough prevailed in New York. The scarlet fever, in the course of this year, spread over Connecticut. Its effects are very apparent in the bills of mortality. It appeared in 1795, in Boston in the spring or early in summer, and continued to prevail in Massachusetts and New Hampshire in 1796. Its progress from New York to Maine, about 300 miles or perhaps 400, was run in about four years. It travelled therefore about 100 miles in a year. Such also was the fact in the preceding period; as well as in 1735. It should be observed also that its direction, in the two last epidemic periods, has been opposite to that of the disease of 1735. The latter began in New Hampshire and marched to the westward; the former began in the middle states, and advanced to the eastward."

Epidemics seem to travel, but in reality they break out when and where impaired nutritive life is at the most fit stage for their development by the meteoric impressions and vicissitudes of the local climates. This accounts for all their seeming vagaries. The progressiveness in the character of the epidemics from slight colds, influenzas, and cynanches to malignant diseases is also accounted for by the intensifying effect of a succession of blighting years.

Yellow Fever in New Haven.—"In the winter and spring of 1794, the scarlatina anginosa prevailed generally in New Haven and the neighboring towns; manifesting a highly pestilential condition of the elements. *One case of bilious fever, attended with a vomiting of black matter, occurred as early as the last week in March.* [Italics ours.] * * * The first [subsequent] cases occurred about the 10th of June, which is earlier than the epidemic pestilence of America usually occurs; and which indicates the existence of strong local causes. * * In July died only three persons, and for about two weeks, no new case occurred. But in August, the usual time of the appearance of this disease in this part of America, it broke out with fresh violence. * * That the plague in New Haven was the effect of a condition of the elements united with local

causes, is proved by subsequent events. In the following year, a malignant dysentery originated and prevailed in New Haven, destroying more lives than the bilious plague of 1794. This disease is acknowledged by able physicians to be of the same species as the yellow fever. See Lind on that point, and Rush's Works, vol. v. 5, where it is stated, on the authority of Dr. Woodhouse, that several persons took the yellow fever from soldiers laboring under the dysentery. It is well known also that an epidemic yellow fever has been converted, by a sudden change of weather, into an epidemic dysentery, and *vice versa;* as at Baltimore in 1797. It is also true that the yellow fever in autumn passes off in dysentery, as in New London in 1798. The same is at times true of the plague in Asia. * * * The summer of 1794 was, in most places, less sickly than in 1793 and 1795. * * In this [latter] year, the bilious pestilence prevailed in Baltimore. * * In the succeeding winter, the epidemic of the summer and autumn changed, in Philadelphia, into the form of catarrh or pleurisy, and in many cases, was attended with delirium and mania. See Rush on this subject." * * *

Yellow Fever in New York.—"The winter of 1794 '5 was very cold in Europe, and in January 1795, the French troops marched into Amsterdam, over the rivers and canals, on the ice. * * The catarrh was epidemic in January and February, in the British channel fleet. In one ship it assumed the symptoms of a pure typhus.—(*Trotter's Med. Naut.* p. 366.) In America, the same winter was milder than usual. Persons walked on the battery at New York, for pleasure, on Christmas day, with no covering but their ordinary autumnal clothes; and vessels sailed up the Hudson and Connecticut till January. In the latter part of the winter, we had some cold weather, and a cool late spring. About the 20th of July, began a series of hot, damp, rainy weather, with light southerly winds; a season answering to the description which Hippocrates has given of a pestilential constitution. Heavy rains were followed by a humid, close, sultry air; no thunder and lightning; no north-westerly winds to cool and refresh the fainting bodies of men. For many weeks the atmosphere was so loaded with vapor, that no electricity could be excited

with the best instruments. Fruit perished on the trees, and fell half-rotten and covered with mold. Sound potatos from the market perished in my cellar in thirty-six hours. Cabbages rotted off, between the head and the stalk, as they stood in gardens. * * In July of this year appeared the bilious plague in New York. * * * It must also be observed that the disease in New York never spread over the whole city. It ran along the low streets on the East river, in what was formerly the swamp and in the narrow alleys. * * The deaths were about seven hundred and thirty; among which at least five hundred were foreigners, most of whom had recently arrived from Scotland and Ireland. * * This fever in New York was preceded in spring by epidemic measles, which disappeared totally during the three months, when the fever was the ruling disease, and re-appeared in November—a decisive evidence that the fever was produced and controlled by the same cause, as the measles. * * * The extreme unhealthiness of the summer of 1795, was manifested by unusual mortality in various other parts of the country. On the level plains of Duchess county in New York state, prevailed a mortal dysentery and typhus fever. At Coxsakie on the west of the Hudson, raged similar diseases with fatal effects. In some western parts of the state, near the marshes which border the waters of the country, a malignant bilious fever was more terribly fatal, than the fever in New York. In Sheffield, a western township of Massachusetts, near two large ponds which form marshy grounds, bilious fevers, which had not been known there for many years before, prevailed and in some cases were mortal. * * * In 1796, the measles which commenced in New York in 1795, was epidemic in Connecticut; and unusually prevalent in London. In 1796, also the bilious plague again appeared in New York, but in a different quarter of the city from that which was principally affected, the year preceding. In 1795, it began and was most general in the north-eastern part—in 1796, in the south-western part, near the battery; and in both summers, its seat was along the wharves on the East river, and in the adjoining streets and alleys. * * * In this year, the disease occasioned a considerable mortality in Charleston, South Carolina,

and in Newburyport, in Massachusetts. It appeared in Boston also, but was not general nor severe. * * * The pestilential state of the elements was strongly marked, this year, by the poorness of the shad brought to market in New York. These were all thin, lean and small; and for this reason, I purchased none for my own use, during the season. * * Some cases of yellow fever occurred in Philadelphia in 1795; catarrh was frequent in the winter, followed by measles of a most inflammatory nature. * * It has been already observed that the winter of 1795, was remarkably severe in Europe. In America the same winter was as mild as usual. But in the summer and autumn of 1796, the northern states experienced a most *severe drought. The following winter was very severe* [italics ours]; the cold exceeding what is usual, and being of long duration. The summer of 1797 was cool and wet. *The winter of* 1797–'8 *was severe*—and the cold of very long duration. It commenced early in November, and continued till March. The Hudson and Connecticut were closed in November; a very rare occurrence. For several weeks in November and December, the wind, without much snow on the earth along the Atlantic coast, was from the north-west and intensely dry and cold. In this month, [Jan. '98,] the severe cold reached the West Indies, and frost appeared, for several mornings, on the windows in Port Royal Parish, in Jamaica."—(*Royal Gazette, Jan.* 29, 1798.)

Yellow Fever in Baltimore, Norfolk and Charleston.—"This year, 1797, was remarkable for other singular phenomena in Europe and America. In England a pestilence among cats swept away those animals by thousands. It seems that this disease began as early as April, and succeeded an epidemic catarrh among the human race. The same cat-distemper was afterwards epidemic in France. A society at Montpelier instituted an enquiry into this remarkable phenomenon. The cat-distemper appeared in Philadelphia, as early as June, and proceeded northward and eastward, like the catarrh of 1789. In August it was very fatal in New York, and in the course of the summer and autumn, it spread destruction among those animals over the nothern states. In August, dead fish, in great numbers, were seen to float down James'

river, in Virginia, for many days in succession. Canine madness, during the same year, was unusually epidemic and attended with fatal effects, of which full accounts may be seen in the first volume of the Medical Repository. These phenomena indicate an unhealty state of the elements, [a bad state of food.] * * * The plague appeared in Philadelphia, Baltimore, Norfolk and Charleston. * * * The disease began at Baltimore early in the season, in June, and for more than two months, prevailed as a remitting fever of the common kind, without infection, and it is agreed on all hands not to be of imported origin. During a wet season, the damp weather cast the disease upon the intestines, and it appeared in the form of a dysentery—a most important fact, which proves what Dr. Sind has asserted, that a dysentery is a yellow or malignant fever seated in the bowels. The wet weather ceasing, the fever resumed its former appearance, and gradually increased, till it exhibited its *worst forms and became infectious.* * * * In Philadelphia, the disease in 1797 appeared, in a few cases, as early as June—one on the 5th—one on the 15th and another on the 22d. * * The city of Philadelphia was deserted by a great proportion of its inhabitants, and thus the mortality was limited to about one thousand victims. It prevailed principally in the suburbs. This epidemic was followed as usual by the influenza.—[In the colder season.] By foreign publications, it appears that the catarrh was epidemic in England in the first months of 1797. I have no particulars of the violence or extent of this disorder; but if it was severe and general, no event is more certain than that sickly seasons will follow. What confirms this opinion, is, that in the following summer, the plague raged in Constantinople, on the Barbary coast, and in Corsica. * * * In 1797 the bilious plague carried off forty-five of the inhabitants of Providence. * * * The symptoms in all these cases, were the predominant ones of the true yellow fever; and the bodies exhibited more or less petechiæ and vibices, [evidences of very putrid scurvy.] * * * During the pestilential period, the state of the atmosphere produced its usual effects in winter; which appeared in extraordinary symptoms of the pleurisy and peripneumony. * * * This

species of pleurisy appeared in Philadelphia as early as September 1791, the month when the malignant fever prevailed in New York. A patient of Dr. Rush had a 'red face, inflamed eyes, a perpetual tossing and sighing, strong animal powers, but weak pulse and sizy blood,' [scorbutic blood.] In February 1792 many cases of similar pleuritic fevers occurred in Philadelphia—diseases assumed the inflammatory diathesis which has remarkably characterized the epidemic of the last pestilential period. In summer and autumn of 1797, a malignant fever, attended with dysentery, was epidemic in Portland and its vicinity, in the district of Maine. The dysentery subsided in October, but the fever continued. It appeared in the country, as well as town; and was usually conquered by the use of alkaline remedies. Many of the patients had a yellow skin and the predominant symptoms of the yellow fever of our cities. * * * This last instance is decisive evidence that the pestilential yellow fever not only originates in our country, but in villages in the 44th degree of latitude, a more temperate climate than that of New York and Philadelphia.

In the winter succeeding, the pestilential principle still exhibited its effects. The fever continued to prevail, being ushered in with nausea, vomiting and chills succeeded by heat; but it was generally accompanied with sore throat and scarlet efflorescence. It prevailed in almost every town in the country."—(*Dr. Barker's letter, Med. Repos.* vol. 2. 147.)

Yellow Fever throughout the United States.—"The year 1798 was remarkable for the most general prevalence of the plague of our climate, that has been known; and in some cities, the disease was peculiarly malignant [after the coldest winter of the whole pestilential period, and the hottest summer, and greatest vicissitudes.] The preceding winter had been unusually long and cold—the May following was dry beyond what is recollected in any former years—June was remarkable for deluging rains, which occasioned floods in the Connecticut, Delaware and Susquehanna rivers, which did no inconsiderable injury. Two or three of the first days of July were excessively hot, and succeeded by twenty days of very cool weather—then commenced a long period of the

most sultry weather ever known in our climate, accompanied, in some places, with great rains. * * * In summer and autumn the grasshoppers multiplied to such a degree from Pennsylvania to New England, as to devour vegetables, and essentially injure the pastures and grass fields. The pestilential fever in Philadelphia appeared early in the season—a number of cases in June, and still more in July. In August early, the city was alarmed and soon deserted by at least three-fourths of its inhabitants. The disease was unusually mortal; and extended to the remotest parts of the city, where it had not formerly prevailed. Owing to this circumstance some families suffered, which had escaped in former years. The number of deaths amounted to 3,440. This disease as usual, abated with the appearance of frost; but individuals were attacked with it, and carried off, in the midst of the following winter. * * * At Wilmington, in the state of Delaware, thirty miles from Philadelphia, the same disease raged with more than its ordinary mortality. Its victims amounted to 250. * * * The fever also prevailed in New Castle and at Duck Creek in the same state. Letters from respectable physicians in the public prints, have informed us that this disease prevailed also in some parts of New Jersey, as at Bridgeton and Woodbury; and especially near the meadows on the borders of the Delaware. * * * At Norwalk in Connecticut several persons died of the same distemper. * * In the first week of August, appeared a bilious fever in New York, between Old slip and Coenties slip, in the street next to the water; a place remarked for great accumulations of filthy substances. * * * But on the 12th, the pestilential fever appeared in other parts of the city, and about the 20th, began to extend and assume a formidable aspect. * * * The disease was more malignant, than in its preceding visits, and exhibited more frequently the bubo and carbuncle. It extended over two-thirds of the city, and numbered with the dead about two thousand of its inhabitants. * * * In Boston, the disease began near the town dock and the neighboring wharves in the month of June; but its most violent effects were experienced on the south side of Fort Hill, an elevated part of the town and exposed to free

air. This circumstance has occasioned no small surprise; but as the fever of 1796 began in that part of the town, perhaps we may find the cause in the very extensive flat, between Boston and Dorchester point, which is uncovered at low water; perhaps in the exposure of that hill to the direct rays of the sun, [and remoteness of the locality from the market] * * The fever afterwards invaded the north part of the town, and a street near the pond; supposed to be excited by noxious exhalations. Some parts of the town, which are low and filthy, escaped the fever. At first it attacked the most robust young men, and the diathesis was highly inflammatory. Later in the season, it attacked persons of all ages and habits. At first it was not infectious, but in the latter stages of its progress, it exhibited infection. It disappeared with the arrival of frost, after carrying off nearly 200 patients.—(*MS. Letter from Dr. Eliot.*) * * * The same malady appeared in Portsmouth, New Hampshire, with equal mortality, as far as it extended; but its progress was limited to one street near the water. New London, in Connecticut, is situated in a very healthy part of the country, on a harbor, whose shores as well as the surrounding lands, are dry and rocky—its population about 3000 inhabitants. In the last week in August 1798, this town was suddenly invaded by the plague of our country. * * * The disease prevailed about eight weeks and destroyed eighty-one lives.—(*Printed account of the fever by Charles Holt.*) On enquiry I find that this disease in New London had its precursors, in sporadic cases of the same fever, in the three preceding summers. * * Yet in these years, it did not spread and become epidemic. The pestilential period however was progressing in that town, as appears by the bills of mortality; for the ordinary number of deaths does not exceed 60 in a healthy year; but in 1795, the number amounted to 86—in 1796, to 80—in 1797 to 101—in 1798, to 133. Here we observe a great augmentation in the mortality of the town, several years before the crisis of pestilence, and especially in the year next preceding it. The importance of this fact towards a right understanding of the causes of epidemic pestilence [bad nutrition] cannot be mistaken. * * * The usual lake and river fever prevailed in

the same season, in many of the interior parts of the country; as at Royalton in Vermont, on the Grand Isles in Lake Champlain, at New Milford in Connecticut, and in various parts of the state of New York; in which places, it was attended with considerable mortality. Sporadic cases occurred in all parts, and in the healthiest situations, of the country. In many places, intermittents and dysentery were unusually violent and obstinate. I have no account of the temperature of the weather in any part of Europe, during the summer of 1798; except that in some parts of Sweden, the first months of the summer were excessively dry, as the month of May was in America. A pestilential fever appeared in Italy in June; but I have no details of its progress. * * In autumn broke out a pestilential fever on the Baltic, in Dantzick or its vicinity. * * In November and December, the pestilence in America was succeeded as usual by influenza, which was very prevalent in all parts of the country, and in the southern states attended with some mortality. * *

The winter of 1798–'9 was very severe in both hemispheres. In the United States, it began about the middle of November, with snow, and a heavy fall of snow on the 18th and 19th was followed by severe cold that lasted till the second week in January. From this time, there was a relaxation of cold for about three weeks, and the ice in Connecticut river gave way. But in February commenced severe cold, which continued, for the most part to the vernal equinox. April was also cold; severe frosts occurred often, and checked vegetation. On the 2d and 8th of May were considerable falls of snow, followed by frost. On the morning of the 4th and 5th, we had ice at New Haven as thick as window-glass. Peaches blossomed about the middle of May, and apples were not in full bloom, till the 22d. This long duration of cold exhausted all the barns of hay and other fodder, and multitudes of cattle perished in various parts of the country. In Europe, the winter was equally severe. The rivers in England, Germany, Holland and France were covered with solid ice, and at the breaking up of winter, the Rhine rose and burst its barriers, inundating many parts of Holland with terrible destruction. The severity of the win-

ter was felt even in the south of Italy, and the French and Neapolitan troops suffered greatly from snow on the Appenine, in the vicinity of Naples. In Siberia, we are informed by the public prints, perished whole villages of men and cattle by the severity of the frost. In America, the diseases of the winter were characterized by the predominant diathesis of the reigning epidemic constitution, a yellow skin and bilious discharges. * * The present pestilence has been long and severe and the citizens look with impatience, for the usual salubrious state of their atmosphere. * * * In every part of our country, one remark has been made by physicians, that from the year 1792 or '3, intermittents and remittents have become more numerous and obstinate, and attended with unusual symptoms. In many places, these diseases have been multiplied in a ten-fold ratio; elucidating the principles of the great Sydenham, relative to "Constitutions of Air," and demonstrating the existence of a general cause in the insensible properties of the atmosphere, to which we may and must ascribe the pestilence of our maritime towns."

So thought Mr. Webster and Sydenham, but they were both mistaken; the fault is in the nutritive condition of the people, caused by bad crops, and these by bad seasons.

"The beginning of the summer of 1799, though late, was favorable to vegetation, and the first crops were good. Wheat, which had been blasted, for several preceding years, in the eastern states, was excellent. But in July commenced a most distressing drought, in all the northern states; and particularly in the middle states, and the interior country; by which the maize, buck-wheat and potatos, were greatly injured. In some parts of the state of New York, the maize was totally destroyed. * * * In the spring prevailed influenzas or catarrhal fevers; in some places cynanche maligna; and generally rheumatic complaints, and light ulcerations of the throat. In many places, the fevers of winter were characterized with a yellow skin and bilious discharges. All these marked the continuance of a pestilential atmosphere. The plague showed itself early, in scattered cases, in Philadelphia; but disappeared, to the unspeakable joy of the inhabitants. * * This terrible scourge renewed its ravages in Philadelphia

and New York; and in various parts of our country, bilious fevers appeared with malignant symptoms. At Hartford, on the Connecticut, appeared the malignant fever in August, to the surprise of the inhabitants of the state."

We have drawn largely from this long pestilential period, and how signally the account sustains our theory of epidemics. We say our theory, our doctrine, our philosophy, our views, our conclusions, our deductions; and are continually saying it, and expect to have it cast up at us; but what shall we say? is it not our philosophy? has not the finger of scorn been pointed at it? has it not been hissed and groaned at? have not the journals undertaken to laugh and cough it down? have not our articles been refused insertion in their pages? an editor in returning an article, writes as follows: "I find that the prejudice against your views is so strong in these parts, that I could not insert it without giving rise to much grumbling." Nobody will own it as *theirs*, it is therefore in all proper humility *our* philosophy.

After we had drawn our conclusions as to the cause of cholera and other epidemics, we longed to find some source of reference by which we could learn the constitution of the seasons and state of the crops and fruits in '93, '5 and '8, confidently believing that the history of those years would back us in every particular, and lo! here it is.

We could have drawn much more to sustain the argument, if we had gone back into the dark ages, for Webster commences with the earliest histories of the world; but dates are not to be relied on with precision far back, and we want *cause* and *effect*—a reliable statement of blights and pestilence.

With the inbred notions of diseases being distinct individualities, no law can be conceived that shall meet the case; but with a rational and truthful premise to start on, viz.: a unity of primary pathology, the laws of epidemics are perfectly intelligible.

Late Census of Ireland on the Laws of Epidemics.—Whoever will examine the Report (in Part V., Census of Ireland for the year 1851,) on the Potato failure and the Great Famine and Pestilence of 1845–'50, will have a clear and

convincing proof of the truth of the one great cause of all disease, *impaired nutrition*—we mean, of course, the inducing cause, the inlaying cause, the predisposing cause, the *remote* cause in the sense in which this term is universally understood and used. The exciting or developing causes stand in a more proximate relation to the active agonies or epiphenomena.

Our preaching from this text will be brief; let the facts in the following extracts, speak for themselves. If nobody can see that they sustain our theory from beginning to end, the scorbutic nature of primary pathology—let the matter pass; let scholasticism continue to imagine there are hundreds of idiopathic dissimilar diseases, produced by hundreds of imaginary "occult qualities in the air," requiring hundreds of antidotal therapeutic nostrums and specifics, and let it busy itself in the search after these, and let it continue to teach its accumulating hypotheses and dreamy imaginings, nevertheless, our record must be made and accomplished, though it fail to convince a single son of Æsculapius.

The great facts in the Report, from which we quote, may be summed up in few words, viz.: a series of most extraordinary years caused the annual failure of crops and fruits until a famine ensued, and which, like all other famines, was followed and accompanied by mortal epidemics, viz.: of Fever, Scurvy, Dysentery, and Cholera, the great crowning forms of the billows of mortality and their order of occurrence in the chaos of diseases that sprung from the one elemental cause—impaired nutrition.

The westward progression and world-wide invasion of the extraordinary influences in meteorology that caused the blights: that caused the impairment of nutrition; that caused fever, scurvy, dysentery, cholera; that caused the awful mortality that sped from Asia to Europe, to America, to California and the great South Sea, are well-attested phenomena. We have already woven the phenomena of this pestilential period into our researches on cholera and cholera infantum as they occurred in the United States, and doubtless this more faithful British record will confirm all.

"The phenomena attending such calamities," says the Re-

port, "are indeed identical throughout all ages of the world, and all countries—elemental disturbance, destruction of crops, and epidemics fatal to all life, follow each other." (*Census of Ireland for* 1851, part v. vol. i. p. 255.)

"Although the remarkable pestilential period during which vegetable life throughout Europe and America suffered so severely, and in which was included the great famine and pestilence in Ireland, is usually dated from the summer of 1845; yet a reference to the recorded phenomena of the past few years will show that the *Epidemic Constitution*, which arrived at its climax during this and the four following years, really began so far back as 1839–'40. The order of events was as follows:—Epizootics, Epiphytics, Epidemics, and finally all three together."—(*Ibid.* p. 235.)

"From a series of meteorological observations from January, 1843, to December, 1849, made by Mr. Yeates in Dublin, and detailed to the Royal Irish Academy, 'it appeared that there was not any one month which was either wet or dry, or of average weather during the whole of that period. The most settled weather was in August and December, and in those months the weather was either very wet or very dry; each was for four years very wet and for three years very dry.' Taking two inches as the mean quantity for June;—it was remarked that if the fall of rain was more than $2\frac{1}{4}$ inches it was considered wet, and if less than $1\frac{3}{4}$ inches it was decidedly dry. During those seven years June was four times very dry, and three times very wet. 'The weather had a remarkable tendency to extremes; there were but eighteen months of average weather; thirty-two months were decidedly wet; and thirty-four decidedly dry. The average fall of rain in May was an inch and three quarters, [but] in May, 1843, more than four and one-half inches fell; in May, 1844, not much more than a quarter of an inch; and in May, 1845, very nearly the average quantity. This great and striking difference of weather in the same month in successive years, must have had a great effect on vegetation as well as on the state of the atmosphere. There was not a month of average weather in 1846, there was but one in 1845, and but two in 1844 and 1848. In 1846, $30\frac{1}{2}$ inches of rain fell, and in 1848

upwards of 31 inches; most fell in April, and least in December. If it should appear that the climate of Ireland is liable to such great vicissitudes, it might be of importance to call the attention of agriculturists to the fact, lest by the occurrence of one or two favorable seasons they might be induced to cul tivate crops which are dependent on dry warm weather at any period of their progress to maturity.' The quantity of rain which falls during the months of December, January, and February, in an agricultural point of view, and also as regards epizootics and pestilences, is of comparatively slight account, but the rain-fall during the other months and seasons of the year is of vast importance. From Mr. Yeates' Tables, constructed from observations made in the city of Dublin, we learn that the month of March was above the average wet in 1844, 1846, and 1848; that April was unusually wet in 1846, 1847, and 1848; May presented more than the average amount of moisture in 1843; that June was universally wet in 1843, 1845, and 1848; July, in 1845 and 1846; August, in 1844, 1846, 1848, and 1849; September, in 1846, 1848, and 1849; and October, in 1846, and 1849. During the seven years there was but average weather for eighteen months; and more than the average quantity of rain fell on thirty-two months."—(*Ibid.* p. 266.)

This tells the story of the elemental disturbances we tried to tell, and shows how vegetables and fruits lost those qualities that support animal life. The grass, even, is deteriorated, hence murrains. How plainly nutrition is life and health, and the want of it disease and death in all organized life, vegetable and animal.

Phenomena and events in 1846.—" 'Perhaps in no one season were there ever before known so many severe thunder-storms in England as we have had in the last three months.' August 5th, the thermometer in Paris in the shade 101·75°, the hottest day since 1825; a violent thunder-storm in the evening. September 7th, a thunder-storm in Yorkshire. October 20th, great floods in France along the banks of the Loire, sweeping away houses, bridges, villages, and railways. 200 houses destroyed in the city of Rouen, 'upwards of 2,000 persons are without food or raiment. The town of St. Fir-

man, containing 600 souls, has been entirely engulphed, the inhabitants being surprised in their beds, were unable to find means to escape, and the whole perished.'—(*Ibid.*)

"*Crops.—Complete and General Potato Failure.*—The loss [of 1846] in the potato crop of Britain only, is estimated at £12,000,000.—(*Ibid.* p. 267.)

"A disease similar to the potato blight appeared in the wheat of Belgium.—(*Ibid.* p. 267.)

"September 8th, we read of the appearance of a malady resembling the potato disease in the turnip crop, in the vicinity of Oxford. 10th, potato disease in French Flanders and Sweden. September 17th, the turnip crop in Morayshire is beginning to manifest the appearance of disease; beans and peas are also affected. Similar disease affected most of the fruit this season in Scotland.—September 25th, a disease appeared in the celery plant, which has been attacked by a small green insect. October 3rd, the disease which affected potatos has attacked fruits, of which the apple is a specimen—the entire skin being perfectly black. October 29th, a new disease in apples about Bury, in Sussex.—(*Ibid.* p. 268.)

"On the continent, the rye and potato crops again failed, and prices rose early in the season above those ruling in England.—(*Ibid.*) The failure of the apple and pear crop in Hereford and other cider districts is almost general.—(*Ibid.*) 'The summer of 1846 was unusually warm. The wheat appeared particularly fine. The appearance of the potatos was most favorable, when suddenly they seemed blasted as if by lightning. The leaves withered; the stalks became bare and black; the whole plant was dead, while the tubers were in many places scarcely formed. The crop was destroyed; the food of a whole people was cut off!'—(*Ibid.* p. 270.)

Epizootics.—"'Various epizootic affections were prevalent amongst cattle,' previous to the breaking out of fever in the county of Clare. 'Pleuro-pneumonia prevailed, both previously to and during the epidemic, in the northern and north-western parts of the county of Derry.' In Tyrone the 'ordinary epidemic of pleuro-pneumonia was prevalent among cattle, previously to and at the same time as the epidemic fever,' which commenced in December, 1846. The epizootic like-

wise spread through Carlow in this year. In most instances the disease prevailed amongst horned cattle both before and at the same time with the epidemic fever which began in 1846, and raged so violently in 1847. This was the case in the county of Kilkenny, where the fever commenced in April. An epizootic prevailed amongst swine in part of the county Cork. The disease among domestic animals appears to have been, generally, the pleuro-pneumonia, but we are expressly told that in the neighborhood of Bantry 'cow-pock extensively attacked the black cattle.' Doctor Cronin of Cove, county Cork, observed that before the breaking out of Fever, Purpura existed in the human subject, and pleuro-pneumonia prevailed extensively amongst cattle. Inflammatory diseases existed among cattle in some parts, previous to, and in others simultaneously with the human epidemic. Like other epidemics this of Scurvy, Fever, and Dysentery, was preceded by serious disease amongst cattle, especially horses and cows.

"In June a disease raged among the pigs in the county of Wicklow; they turned purple when attacked. [Doubtless.]

"April.—Fever and small-pox prevalent in Inverness and throughout the Highlands of Scotland. July 27, great amount of sickness among the newly arrived Irish emigrants at Boston. August 3d, prevalence of English cholera in London. 22d, a letter from Trieste represents all Palestine to be in a state of famine.

"Cholera still proceeding through Persia; in September it passed the Russian quarantine on the borders of the Caspian Sea, and ravaged the villages in that quarter, as well as a great number belonging to the nomad Cossacks. The city of Teheran was devastated. It also raged at Bagdad in this year.

"Fearful mortality from famine and epidemic pestilence occurred in Gallicia.—(*Ibid.* p. 275.)

"In the spring of 1846, Diarrhœa and Dysentery prevailed extensively either as idiopathic affections, or as complications or sequelæ of the reigning fever.

"On the 28th January, a correspondent writing from Bantry,

says—'Dysentery is very prevalent; fever, of a malignant type is also appearing.'

"Scurvy, from the use of diseased potatos, was reported by Dr. M'Cormack from Buncrana, county of Donegal.

"Scurvy broke out in the general prison at Perth, and was described by Dr. Christison in the *Edinburgh Monthly Journal* for June, 1847.—(*Ibid.* p. 276.)

"'It [fever] attacked equally those in good or bad health; but in some instances, as in Innishannon and in Cove, many in the best health, while in Mitchelstown, the majority had previously suffered form privation.' December 7th.—At Trebizonde the cholera was pursuing its march towards Europe.

"Scurvy appeared on board the United States blockading squadron in the Gulf of Mexico, in the summer of this year, which shows how wide-spread the predisposing cause to this disease was at that time. FOLTZ, *in American Journal of Medical Science.*"—(*Ibid.* p. 277.)

Phenomena and events in 1847—*Weather.*—"The temperature of this year was rather below the average, the mean being 48·8°. The seasons were in accordance with the foregoing.

"*Crops—Very Extensive Potato Failure.*—On June the 3rd we read—'The potato disease has appeared again and is very malignant; specimens of diseased potatos were exhibited from various parts of the country, at a meeting of the Agricultural Society.'

"The great dryness of the summer injured the turnips and other green crops, and prevented the growth of aftergrass.

"Aug. 18.—There was a failure in the beans, from a disease similar to that in the potato. In the month of September—Some blight was observed upon the grain crop.

"'In those parts where the population hitherto mainly subsisted on the potato, it was raised with great facility on the mountains by burning the peat soil and setting potatos on the ashes.'"

Here is confirmation strong as holy writ of the truth of our proposition, that the want or lack of the salts of potash, lime, soda, iron, etc., etc., is the secret of the whole matter of the

"potato rot," blight of grapes, failure of crops, etc. Supplying these salts liberally, by means of wood-ashes, (peat is *ligeneous matter* chiefly,) prevented the failure of the potato, prevented the potato blight. Here is the whole secret in a nut-shell, and explains why fertilizers, as guano, lime, either carbonate the phosphate or sulphate, the potash and other salts in wood ashes, as well as the nitrate of potash in all nitre-beds and manures, so quicken old and exhausted soils.

All soils hold these salts variously, and the habitudes of plants are governed mainly thereby, after latitudinal requirements are considered, and when unpropitious years and seasons, so chill the soil, or scorch it with drought, or deluge it with rain, that these salts are not dissolved, or suitably held in solution, or the solution is too weak and dilute, or the changes from cold to heat, and from floods to droughts, are so sudden and severe that vegetable life cannot perform its offices and functions of elaborating the proper quantities and proportions of these salts in the products and fruits designed for the sustenance of animals and man, then the very herbage, and culms, and seeds, and tubers, and fruits are all impoverished, and the whole of vegetation is sickly or scorbutic. Every potato is a sick potato, and has the scurvy, or lacks the healthful supply and proportions of the mineral, alkaline, and earthy bases and salts to be found in a healthy potato. And so of every other tuber, pome, leaf-stalk, cabbage-head, even to the blade of grass the ruminating herds crop. Hence animals sicken and die by thousands, fishes, too, and epidemics occur among men. Science enables us to know positively that this is the true explanation of the whole matter. And it is just as glorious truth to us, born in our mind and first enunciated by us, as though the Royal Society had reported it so, and awarded us accordingly, or the Institute of France had awarded us the Vattmere prize, or the Boylston Society the proffered prize of $10,000. The cause of all blights in the organized world, vegetable and animal, is here explained.

"Potato disease broke out in Poland.—*Dublin Freeman's Journal.* June.—'The French Government have just issued an order that scientific men in the principal towns of each of the eighty-six departments of France, shall examine, micro-

scopically, every fortnight, the growing potatos in the several districts, with a view to discover if the plant be again tainted, and the cause of such a calamity, if it should again arise.'—(*Medical Gazette.—Ibid.* p. 280.)

"*Epizootics.*—May 19.—Great numbers of mad dogs were reported in Rosecommon this season. March 25.—Great mortality among cattle, particularly lambs, in Lincolnshire, Hereford, Leicestershire, and Norfolk; a fatal disease among horses in Perthshire, ascribed to the use of bad hay and want of the usual potato mashes. An epizootic or murrain destroyed much cattle in Europe, principally oxen; dogs, horses, and sheep suffered comparatively less. Great numbers of horned cattle were destroyed in Wallachia.—(*Ibid.* p. 292.)

"*Fever.*—The epidemic of fever has been more fatal in Lancashire than in London. Typhus carried off men and women in the prime of life. Diarrhœa destroys more children and becomes dangerous to adults in the form of cholera.

"Fever on the increase in Liverpool.

"The epidemic fever continued to increase in Glasgow to a great extent, especially in summer.—(*Ibid.* p. 293.)

"Astrachan suffered greatly from cholera, great numbers of the inhabitants having been carried off; as also in Moscow, Alexandrof, and the district of Olgapol in Podolia. The latter is about thirty miles distant from the Austrian frontiers.—*Bascome.* Cholera continued to ravage the Caucasus and different parts of Persia and Russia, and had proceeded as far as Riga, where the disease appeared in 1832. It soon after appeared in Poland and other parts of central Europe.—*Medical Gazette.* In August scurvy prevailed in London owing to the want of potatos.—*Report of Registrar-General.* Epidemic scurvy appeared in the garrison of Givet in France, in May.—*Edinburgh Monthly Journal.* 'Scurvy is raging amongst the inmates of the Milbank Penitentiary, the prisoners of war in Porchester Castle and Norman Cross, and lastly in all parts of Ireland, as well as in very many places in Great Britain.'—(*Ibid.* p. 295.)

"The mortality during the months of September, October, and November this year, 'particularly during November, attained a height never before equalled in Edinburgh.'—(*Ibid.* p. 301.)

"A very fatal complication in this species of fever was jaundice, which was not unfrequently associated with a true *purpurous* eruption over the body, produced, as this species of eruption always is, by a real ecchymosis or effusion of blood into the areolar tissue, and not, like the eruption of maculated typhus, removable at any stage by pressure. Enlargement of the spleen was occasionally detected in this species of fever, both by the touch and by percussion, but it appeared to have no influence over the result. Anasarca of the lower extremities very often followed, and was accompanied by purpurous spots on the limbs and effusion into the knee-joints—(*Ibid.* p. 302.)

"The Breslau Journals furnish sad details of the ravages of famine and typhus in Silesia. At Plassa it is calculated that no less than 3,000 children have been rendered orphans by the epidemic.—*Med. Belge.*

"Ship typhus fever in New Orleans derived from the European emigrants. On the 11th of February, 500 cases of ship fever were in the crowded wards of the charity hospital. (p. 303.) September—Cholera raged at Trebizond and at Bagdad. December—2795 cases of cholera in St. Petersburgh. Influenza prevailed epidemically in Edinburgh, Paris, London, and other large towns at the end of this year. 'On the first week of December, 2,454 persons died in London. On the week following 2,416. Influenza attacked those laboring under all sorts of diseases as well as the healthy. The disease appeared in the British navy on foreign stations. The Grippe prevailed in Paris; and on January 11th, 1848, as many as 5,000 people in Madrid were in bed, suffering from influenza.'—*Report of Registrar-General.*

"'These two causes, the scurvy during the first quarter, and the typhus fever during the second and third quarters, contributed to keep up the mortality (in Edinburgh and Leith) till the middle of November, when a new cause came into operation, viz.: the epidemic bronchitis or Influenza.'—*Stark.*—(*Ibid* p. 304.)

"The severity of the weather and the extreme high price of provisions caused such a severe pressure upon the working

classes in England as to prevent them from obtaining anything like a sufficiency of food.

Mortality.—The mortality [in Ireland] in this year rose to a greater height than in any of the former or subsequent years of the pestilential period; the total number of deaths returned amounted to 249,335."—(*Ibid.* p. 305.)

Phenomena and events in 1848 — *Weather.* — "'This, according to the recorded observations, was a year rather below the standard temperature. The mean of the thermometer was 47·9°. * * The present is considered by farmers the wettest spring known for many years. There was a sharp frost in the first week of May. 'The rain which has fallen during the whole month of June, with scarcely an interval of a day, though it has not yet injured the crops, has given cause for alarm; the cold is intense.'—*Dublin Evening Mail.*

"*Crops—Extensive Potato Failure.*—The potato disease has re-appeared in Sussex and Yorkshire, and the tainted specimens are reported to be 'as bad as any in 1845 and 1846.' A disease almost universal has seized on the hot-house grapes, a description of fruit which Liebig and other naturalists considered free from disease of any kind. A blight has appeared on young larch trees in Perthshire. Wheat has suffered much from the wet and cold weather. 'Rhubarb, cabbage, water-cresses, sorrel, horse-radish, turnips, all belong to the class of anti-scorbutics, and were taken extensively in the spring by our forefathers (who had few fresh vegetables, and little fresh meat during the winter), as 'purifiers of the blood.' The results of the deficiency in the potato crop will not appear only in the outbreak of palpable pupura or scorbutus. People are continually coming to us complaining of the premonitory symptoms, as lassitude, spongy gums, sore mouth, 'flying' muscular pains, and with a certain waxy pallor. They have also anorexia, and epigastric pain, with slight feverishness. In these cases it is almost invariably stated that potatos have ceased to be an article of diet, and that bread is 'the staff of life.'"—Laycock *in London Medical Gazette.*—(*Ibid.* p. 307.)

"*Epizootics.*—June.—The disease of pleuro-pneumonia ap-

peared among cattle in Westmeath, and in September a great distemper raged amongst cattle in Cork.

" ' An epidemic prevailed amongst cattle at the same time as that of fever in the human subject, and was more general than during the past year.'

" A form of small-pox appeared among sheep near Windsor. It was believed to have been introduced through some Spanish sheep. It commenced in 1847, and spread into the present year.

" A disease in England among sheep resembling small-pox. —*Dublin Evening Mail.* July.—' Frightful accounts of the ravages of the Cholera Morbus in Asia Minor. It was making great ravages in Czornowitz, in Austrian Gallicia. Cholera is raging in the interior of Russia; and is exceedingly malignant at Riga, where 100 are carried off daily, out of a population of from 40,000 to 50,000. August.—' The cholera has been raging at St. Petersburgh fearfully. The official accounts give 19,000 seized, and about 12,000 deaths in town, the real numbers most certainly amount to 25,000.' —*London Medical Gazette.* January.—Influenza is now raging with such severity in Madrid and its environs, that the mortality produced is nearly as great as that caused by the Asiatic cholera.—*Medical Gazette.* September.—' The cholera alone occupies the minds of the inhabitants of Alexandria. The number of deaths registered from cholera in England during this year was 1,934, of which 1,005 occurred during the months of October, November, and December.— *Farr's Report on Mortality of Cholera in England.*

" ' The meteorological peculiarities of the year 1848, as compared with 1847, consist in a lower mean temperature and a lower mean range, combined with a greater annual range of temperature; a lower mean barometric pressure, combined with a greater range; an excess of atmospheric moisture, and a much greater fall of rain; a greatly increased prevalence of easterly and southerly winds, and a marked diminution of northerly winds.' ' The prevalence of typhus fever, of scarlet fever, and of cholera, signalize the year as one particularly obnoxious to epidemics.' "—(*Ibid.* p. 312.)

" May 22nd, Cholera is beginning to manifest itself in the

Danubian Principalities. July.—Cholera at St. Petersburgh. August 5th.—Notwithstanding the quarantine regulations the cholera has penetrated into Sweden; in Finland and Oaland it has assumed a most virulent character. Appearance of cholera at Malta, and on the 16th at Berlin; on the 25th in Austria and all southern Russia. 30th, it is reported at Warsaw, in Silesia, and at Constantinople. October 1st.—Asiatic cholera in Edinburgh, and scarlet fever prevalent in Liverpool. November 13.—Mortality at Montrose greater than for the last forty years. Typhus fever, small-pox, measles, cholera, but especially scarlet fever, have proved most fatal. Cholera on Board a convict ship at Plymouth."

Phenomena and events of 1849.—" *Weather.*—Although there was no great rise of temperature this may be reckoned a warm year. It rained this year 29·17 inches, being about the average of sixteen years, including the unusually wet ones of 1839 and 1852; but from 1840 to 1850, inclusive, when the mean would be 28·18, it will appear a wet year. The number of days upon which it rained was 279, being the highest number in any year but one—viz., 1852—for the entire series of observations made in or about the city of Dublin.

" April 18, a heavy fall of snow in London.—*Dublin Evening Mail.*

" July 10th, 'a shower of rain, red as blood, fell in parts of Scotland, and was so manifest that the earth was like raddle.' 'A very severe blight took place the same morning, which has left its marks on the potatos, beans, and fruit-trees.—(*Ibid.* p. 314.)

" *Crops—Serious Potato Failure.* In May, the crops promised a fruitful return, and looked luxuriant and flourishing; the potato blight, however, appeared in Tipperary at the end of the month. September 14th.—'The potato blight has now become universal, changing, in one night's time, the green and healthy-looking appearances of the potato stalks to blackness and decay.' October 1st.—The potatos are bad everywhere; all the newspapers report the increase of the disease.

" The rates of produce in 1849 varied greatly in different districts. The average on the entire kingdom, for 1849, was only in one instance below that of 1848; in every other case

the rates of produce were either equal to, or above that of, the previous year."—(*Ibid.* p. 315.)

"*Distress.*—The earlier months of 1849 were marked by a greater degree of suffering in the western and south-western districts than any period since the fatal season of 1846–7. In March cholera first made its appearance in those districts.

"*Cholera.—Disease.*—January.—Cholera spread in the workhouses of Derry and Belfast; also in the towns of Donaghadee and Monaghan.

"'During the month of January there were no fewer than 3,100 burials within the various cemeteries of Glasgow, of which there were 1,780 from cholera. In spite of the existence of the then prevailing typhus or famine fever in 1848, the burials in January, 1849, were 1,426 more than in January 1848. January.—Cholera at Kensington, thirty attacked in two days. In March it appeared in Limerick, Kilkenny, Lisburn, and Clonmel. April 24th. Cholera is increasing in Galway, and to a frightful extent in Ballymena.'

"From January the number of cases of cholera continued rapidly to increase.

"This visitation was remarkable for the large number of children attacked. June.—Cholera has appeared in England, Wales, and Scotland.—*Saunders' News-Letter.*

"Great increase of cholera in Glasgow, Hamilton, and Holborne workhouse. July 11th.—Glamorganshire assizes postponed on account of the cholera at Cardiff. August 8th.—Severe visitation of the cholera in London and surrounding country.—(*Ibid.* p. 322.)

"*Scarlatina.*—Scarlatina has been continually prevalent during the year. "*Small-pox.*—Small-pox prevailed to a considerable degree during the year.' *Fever.*—The Commissioners of Health, in November, finding the mortality, in many of the temporary hospitals, 'to amount to fifteen, and even as high as twenty-nine per cent.' on the admissions, issued a circular, 'with a view to ascertain whether such high rates of mortality could be traced to any particular causes;' and the following is the substances of some of the replies to these inquiries. Dr. Butler assigns as the cause of the high mortality in the Carrownacregg hospital, Ballinasloe, county of Galway, viz., $29\frac{15}{16}$ per

cent., to the fact, of so many of the patients being attacked with *fever, dysentery, and cholera consecutively;*' and also to the reduced state of the patients from starvation prior to their illness. Dr. Waters says, the fever patients in Parsonstown hospital were 'also attacked by diarrhœa, and unable to resist such from their constitutions having been debilitated by want.' *Opthalmia.*—Epidemic opthalmia prevailed in several of the workhouses in the south and west. During this and the three following years, as many as 118,835 cases occurred in the workhouses, and auxiliary workhouses, of Ireland.—'Typhus fever is raging with unusual severity at Roubaix, in the department of the North [France]. The town presents a most melancholy appearance; nothing is to be seen but hearses conveying the victims of the prevailing epidemic to their place of rest.'—*Medical Gazette.* The total deaths registered in England this year were 440,839. The deaths in London were 27,109, and exceeded the births by 9,835.—(*Ibid.* p. 323.)

It is not necessary to continue these quotations further; we have given a bird's-eye view of causes and effects. Is there any one who doubts that the extraordinary blighting years produced the awful calamities here recorded? What produced the extraordinary years, God knows: but everybody can see that *they* were the cause of the short crops, and the poor, pasty, innutritious vegetables and fruits—the water-soaked, drought-dried, lime-potash-soda-iron-sulphur-phosphorus-lacking products. The potatos, apples, and pigs turned black, or *scorbutic;* and, "purpuric eruptions," "ulceration of the gums and mouths of young children attended with diarrhœa," "black-leg," "purpuric fever," "fever and purpura,' "scurvy fever," are terms used showing the *scorbutic* condition of the human species. Now is any one so blind as not to see that the want of the elements of the tissues in both vegetables and animals was the grand difficulty? We think nobody can fail to see the truth of this matter. The study of this Census Report, we commend to the profession.

We have omitted the asterisks the usual designation of skippings or lacunæ, but instead, have generally made a paragraph of each particular, and quoted the page.

SECTION II.

EVIDENCES DRAWN FROM THE DOCTRINE OF THE UNITY OF DISEASE AND THEORIES INCLINING TO IT.

NOTWITHSTANDING the doctrine of the scorbutic pathology of disease is an innovation as bold in medical philosophy as the Gallilean theory was in astronomy, still the reader cannot but perceive that the argument is supported on all sides by hosts of facts and a crowd of witnesses. It may seem to some a work of supererogation to say more in support of a doctrine so well sustained as is ours of primary scorbutic pathology; but the human mind at large is chary of admitting new truths, especially great ones, for they always bring disagreeable changes. It is less troublesome to get on amid old errors, than to conform to new truths. Those who love truth for its own sake are few compared with the many who dislike that their existing views should be jostled. The probability is, judging from the past, that the truth of our doctrine will never be admitted while there is a shot left in the locker of the old Hull of Physic. It behooves us, then, to proceed with the argument, to bring further witnesses to the stand, and to explain and construe the testimony still, as we have done heretofore, in order to make our position good, past a doubt or cavil, if possible. For, if Sydenham could conceive of a great benefaction conferred on humanity by his announcement of the epidemic law, that one type ruled, and all diseases had to be treated as one at last, when the climax came, when worst came to worst, how much greater a boon may we not claim to have conferred by explaining the rationale of this law, its universal application to therapeutics and prophylaxis, yea, and sanitary regulations, the world over. There is but one law governing disease—impaired nutrition: one law governing the return to health—repaired nutrition. The remarkable phenomena in the natural world of which we have given examples, show how vegetation is first starved, and then animals. If the corn, roots, and fruits are all rendered scorbutic for want of nutrient elements, animals and the

human race feeding on them may not hope to escape the universal primary dyscrasia. But, let us see what support our views may receive from the doctrine of the Unity of Disease, which has descended to us from Hippocrates, and which has been directly or indirectly endorsed by the greatest of minds.

Hippocrates on the Unity of Disease.—In Coxe's editorial remarks preceding the Book on Air, Flatus, or Wind, in the Hippocratic Writings, the treatise, it is stated, is attributed to Hippocrates by Erotian, Galen, and other writers, though questioned by Haller. "If permitted," says Coxe, "to express an opinion respecting it, I would say, that, by whomsoever written, it is one of the most ingenious and well-arranged of all the treatises that have reached us under the name of Hippocrates. * * * Gardeil terminates his translation of the treatise with the remark that, after reading it, a person might be led to think he had been perusing some new thesis, composed and maintained by some systematic physician of the present day. This remark seems to me to be perfectly correct; for it is obvious that if terms have any meaning, we here find, in a few words, the doctrine of *the Unity of Disease* as more fully laid down and elaborated by the late Professor Rush, and even conveying, in the concise manner employed, the whole force of Dr. Rush's more profound illustration of a doctrine he regarded as altogether his own, and as such, taught in the University of Pennsylvania."

Outline of the Contents of the Treatise.—An outline of the contents of this treatise is all that Coxe has given, but this will answer our purpose. The reader can gather from the heads we shall quote the doctrine of Hippocrates in brief. "1. Preliminary remarks, etc. * * * 4. Attempt to reduce Medicine to *one general principle.* 5. Whatever is injurious, is disease, and is to be removed or cured by contraries. [Antipathy.] * * * 6. *The essence of all diseases is one and the same*, and they differ merely in location, which alone causes the diversity of forms they assume. *Note.*—That is, all disease is a unit. 'Morborum autem omnium cum idem modus sit, locus tamen diversus est. Morbi igitur ob locorum varietatem et dissimilitudinem, nihil inter

se habere simile videntur.'—*Fœsius* p. 296; *Haller*, iii. p. 435. The unity of disease is here unquestionably sustained, or I am altogether mistaken as to the tenor of the entire passage, which is correctly rendered from the Greek text.—Ed. 8. Of the triple nutriment of animal life viz., food, drink and air. [Alimentation and aeration are here maintained, but not heat, which was overlooked as a vital stimulant, strange to say.] 9. Distinctive appellation of this last [air], according to its relative situation, viz.: spirit, air, flatus, wind; and of its absolute necessity, both as the cause of life and of disease. 10. It is one of the principal agents of the animal economy, and of nature at large. 11. It is essential to combustion, and to animal life, even to that of fish, there is nothing that does not feel its influence. 12. It is equally the cause of disease as of life; food and drink may be deficient for days without injury, but death is the almost immediate result of the absence of air. 13. It is the vehicle of miasmata; and here the author applies his principle thus laid down, to the production of fever, which is an accompaniment of most diseases. 14. Fever is twofold, common and particular. 15. The first is general attacking all indiscriminately, and is therefore denominated epidemic; the latter attacks such as are inattentive to their diet and mode of life. [This accords with a passage before quoted, which we have shown to be erroneous.] 16. Remarks on each of these, and an inquiry why *all* animals are not equally attacked. [This fact might have taught Hippocrates, the cause was not in the air.] * * * * 21. Ultimately it is added, that flatus appears, under numerous aspects or modes, to be the causes of disease; other causes may also coöperate or may act an intermediate part."—(*Coxe's Epit.* p. 199.)

Whatever impression these views of Hippocrates may leave on the minds of our readers, it is clear that he did thus generalize if it be admitted that he is the author, which is generally conceded. It is clear too, that he referred the cause of disease to defects in the vital stimuli as he understood them, food and drink, and air—alimentation and aeration—by his remark that the former may be deficient for days without injury, but that death results immediately without the latter. This,

though a specious argument, is a fallacy. We may apply the same argument to heat, which vital stimulant he altogether overlooked as a cause of life and cause of disease. Suppose we could deprive a person of all heat as suddenly as we can stop the respiration, in what condition would the person be? a statue of ice! and does this argument prove that defective heat is a more prolific cause of death than defective alimentation; by no means. While, then, we, at this more advanced age of science, can show that Hippocrates was in error in particulars, his views nevertheless, help to sustain our conclusions as fundamentally true in the general. They come to our aid and support, certainly. We have animadverted under a prior quotation of his, embracing the same view as is here maintained regarding the cause of epidemic and sporadic diseases, viz., that when disease is general it must be caused by defective aeration, and when sporadic equally certain the apparently more diversified forms must arise from the different modes of diet. This, again, is specious, but fallacious reasoning. One famine upsets the whole of it; for as its consequences begin to be felt, all forms of disease are aggravated, till finally conforming more and more in type, but one disease as it were, reigns absolute; and the nosologically, differing forms all require the one therapæia, in the main. This is the law and the testimony, yea, and the truth too, and the whole problem is solved by the doctrine of the scorbutic unity of pathology.

Galen on the Unity of Disease.—Here, again we have to acknowledge our indebtedness to the labors of the venerable and learned Dr. Coxe, in his Epitome of the writings of Hippocrates and Galen. After noticing, in his introductory remarks to the writings of Galen, some of the original and most important doctrines maintained by this great man, whom he considers "not inferior, probably superior to Hippocrates, from possessing the advantage of four centuries of additional information, accumulated in the vast libraries of Alexandria, Greece and Rome," he closes with the following.

"Although in several places Galen seems to incline to the doctrine of the *unity of disease*, yet the *prior* claim to it by Hippocrates must be admitted, if there is any force in words.

'Morboram omnium *unum et idem* modus est, locus autem differentiam facit.'—Liber de Flatibus.—Or, as an annotator (Fracassini, opusc: Pathol. Leipsic, 1758, ch. 18, p. 92;) on this part has it: 'Cum humanum corpus liquidis ac solidis, nempe vasis ipsa liquida continentibus, constet, et utraque in statu sano æquabili ac proportionato motu moveantur, vasa scilicet oscillatio quo dilatantur ac contrahuntur; liquida vero progressivo ac circulari, quotiescunque horum motuum interruptionis, vel perturbationis *causa*, *in qua morbus consistit*, *ex uno in alium locum transferatur*, essentia morbi *commutatur*, *ac altero exsurgente*, *alter sæpe recedit*; si vero per quodcunque organorum secretiorum materiæ trajiciundæ aptorum eliminetur, omnino extinguitur morbus.' Whatever may be thought of the explanation here given, there seems no room to doubt, that here is to be found a complete exposition of the Unity of Disease.—Editor."

Galen, it appears, was a more voluminous writer than Hippocrates, having written some seven hundred books, and certainly maintains almost all the fundamental dogmas of the present day—antipathy, homœopathy, allopathy, phrenology, the temperaments, the circulation of the blood, the unity of disease, etc., etc., etc. Most of all these doctrines can be examined in brief, in Coxe's Epitome. He wrote many commentaries on Hippocrates' writings, but his commentary on the work on air, is not translated, or even epitomized by Coxe, so that we can only treat our readers to the remarks made by the editor as to Galen's special views on the unity of disease. Galen seems to be his favorite author and he certainly would have no motive in misrepresenting him in this particular.

Rush on the Unity of Disease.—Rush says, "There is but one fever. However different the predisposing, remote or exciting causes of fever may be, whether debility from abstraction or action, whether heat or cold succeeding to each other, whether marsh or human miasmata, whether intemperance, a fright, or a fall, still I repeat, there is but one fever. I found this proposition upon all the supposed variety of fevers having but one proximate cause. Thus fire is a unit, whether it be produced by friction, percussion, electricity, fermentation, or by

a piece of wood or coal in a state of inflammation. I infer the unity of fever further, from the sameness of the products or effects of all its different forms.

"I have said in my sixth proposition that there is but one fever. Of course I do not admit of its artificial division into genera and species. A disease which so frequently changes its form and place should never have been designated, like plants and animals, by unchangeable characters. The oak tree and the lion possess exactly the same properties which they did nearly 6000 years ago. But who can say the same thing of any one disease? The pulmonary consumption is sometimes transformed into headache, rheumatism, diarrhœa, and mania, in the course of two or three months, or the same number of weeks. The bilious fever often appears in the same person in the form of colic, dysentery, inflammation of the liver, lungs, and brain, in the course of five or six days. The hypochondriasis and the hysteria, seldom fail to exchange their symptoms twice in the twenty-four hours. Again the oak tree has not united with any of the trees of the forest, nor has the lion imparted his specific qualities to any other animal. But who can apply similar remarks to any one disease? Phrenitis, gastritis, enteritis, nephritis, and rheumatism all appear at the same time in the gout and yellow fever. Many observations of the same kind might be made to show the disposition of nearly all other diseases to anastomose with each other. To describe them therefore by any fixed or specific characters is as impracticable as to measure the dimensions of a cloud on a windy day, or to fix the component parts of water by weighing it in a hydrostatic balance. Much mischief has been done by nosological arrangements of diseases. They erect imaginary boundaries between things which are of a homogeneous nature. They degrade the human understanding, by substituting simple perceptions to its more dignified operations in judgment and reasoning. They gratify indolence in a physician, by fixing his attention upon the name of a disease, and thereby leading him to neglect the varying state of the system. They moreover lay a foundation for disputes among physicians, by diverting their attention from the simple, predisposing, and proximate to the numerous, remote,

and exciting causes of diseases, or to their more numerous and complicated effects. The whole materia medica is infected with the baneful consequences of the nomenclature of diseases, for every article in it is pointed only against their names, and hence the origin of the numerous contradictions among authors who describe the virtues and classes of the same medicines. By the rejections of the artificial arrangement of diseases, a revolution must follow in medicine. Observation and judgment will take the place of reading and memory, and prescriptions will be conformed to existing circumstances. The road to knowledge in medicine by this means will likewise be shortened; so that a young man will be able to qualify himself to practice physic at as much less expense of time and labor than formerly, as a child would learn to read and write by the help of the Roman alphabet, instead of Chinese characters.

"In thus rejecting the nosology of the schools, I do not wish to see them banished from the libraries of physicians. When consulted as histories of the effects of diseases only, they may still be useful. I use the term, diseases, in conformity to custom, for, properly speaking, disease is as much a unit as fever. It consists simply of morbid action or excitement in some part of the body. [Morbid actions of symptoms are the evidences of disease, but not disease itself.] Its different seats and degrees should no more be multipled into different diseases, than the numerous and different effects of heat and light upon our globe should be multiplied into a plurality of suns. [Because by so diverting the mind from the primary, scorbutic pathological condition, to the falsity of numerous and independent morbid beginnings, it is led only into errors in pathology, without the probability of fulfilling the rational indications in a therapeutic point of view.] * * * * Diseases, like vices, with a few exceptions, are necessarily undisciplined and irregular. Even the genius of Dr. Darvin has not been able to compel them to move within lines.

"I return from this digression to remark, that morbid action in the blood vessels, whether it consists in preterna-

tural force and frequency, or preternatural force without frequency, or frequency without force, constitutes fever.

* * * * * *

"But there is a grade of fever, which transcends in force that which produces inflammation. It occurs frequently in hydrophobia, dysentery, colic, and, baron Humbolt lately informed me, upon the authority of Dr. Comoto, of Vera Cruz, in the yellow fever of that city, where it proves fatal in a few hours after it attacks. In vain have physicians sought to discover, by dissections, the cause of the fever in those cases, when followed by death in the parts of the body in which it was supposed, from pain and other symptoms, to be principally seated. These parts have frequently exhibited no marks of inflammation, nor of the least deviation from the healthy state. I have ascribed this apparent absence of disease to the serous vessels being too highly excited, and thereby too much contracted, to admit the entrance of red blood into them."—(*See Rush's Inquiries*, vol. iv.)

These last two paragraphs show that Dr. Rush, after all, did not fully and clearly comprehend the truth of his great doctrine of the Unity of Disease—did not know the real pathology of the one disease. His "morbid action in the blood vessels" is broad enough to cover every pulse that has ever been named or that can be dreamed of, but it throws no light on the pathology of epidemic diseases that kill in a few hours —the last ends the game. It is very evident that he did not understand in what this malignant "grade of fever" consisted. Dissections had never revealed it, nor was the microscope even, able to reveal it. Nought but chemistry and *a priori* reasoning could reveal it. He inferred the serous vessels to be in a state of tonic contraction, because the blood was not impelled into them in the organs racked with pain. Now our key explains this. Want of power, from blockaded nutrition—the effete, putrid waste has not been eliminated, neither new fresh elements supplied. See the report of our first case of cholera in 1849 in Chicago, at page 291, Nursing Sore Mouth. Vessels contracted in dying subjects, indeed! there are no wholesome elements of nutrition in them; here lies the difficulty.

In reviewing the theory as elaborated by this great and learned physician, every reader, we think, will be impressed with the conviction that, Dr. Rush was sincere and honest in thus generalizing; that, theoretically, he regarded disease as a unit, and even *practically* so regarded it also, at the bedside; but that after all he did not comprehend it—did not see its one origin in an *impairment of* nutrition. It was the same with Hippocrates and Galen. Thousands of practitioners have inclined to the same view, without understanding *why* disease is a unit, which problem we have solved. Every physician as he grows older diminishes the number of his remedies, until he ordinarily uses but a few. This was Dr. Rush's course as he tells us and as may be seen by reference to his views in full on this theory, in the fourth volume of his Inquiries. It is the same in the homœopathic school. "The existing practice of homœopathy is a species of empirical routine, nothing else, every disease is treated with a certain set of remedies," etc.,—(*Hempel's Organon of Specific Homœopathy.*) This is the case in the Thompsonian school; and also in the hydropathic school. We speak not this to disparage any school, but to show, the little dependence there is to be placed on drugging, per se, no matter what the system. The main dependence is diet and regimen; and the *proper* dietary is unfolded in our new philosophy. Not that drugging is useless, not at all; we have elucidated the *principles* on which the great value of the administration of medicines rests.

Although we marvel at the fact of Dr. Rush's holding to the doctrine, without an accurate perception of the one primary pathological condition in which the essential unity of disease consists, still the fact that he did so hold and believe, now the problem of primary pathology is solved, is very convincing testimony to the truth of the doctrine, as well as evidence of his extraordinary penetration, powers of observation, and originality and independence of mind. It is very clear, too, that he anticipated a revolution in the nosological fanfaronade with which scholasticism had cursed medicine. But he reckoned without his host. We will not anticipate any such happy catastrophe. The mountains of error are piled too high, with bases too broad to be upset by any sudden

lightning flashes of truth or thunder-tones of reason. Errors like icebergs must melt away slowly. Nothing but the conviction of the truth of a one universally inlaid primary pathology, the root and basis of all pestilence, will ever convert the universal faculty to the doctrine of the unity of disease. This conviction will only be arrived at slowly.

Hahnemann on the Unity of Disease.—Hahnemann says, after explaining that acute diseases arise from internal *acute* miasms, and chronic diseases from *chronic* miasms, of which syphilis and scyosis are first named. "But a chronic miasm that is incomparably greater and far more important than either of the two last named [syphilis and sycocis], is that of psora. * * * This psora is the sole, true, and fundamental cause that produces all the other countless forms of disease, which under the names of nervous debility, hysteria, hemicrania, hypochondriasis, insanity, melancholy, idiocy, madness, epilepsy, and spasms of all kinds, softening of the bones, or rickets, scoliasis and cyphosis, caries, cancer, fungus-hæmatodes, pseudo-morphæ of all kinds, gravel, gout, hemorrhoids, jaundice and cyanosis, dropsy, amenorrhœa, gastrorrhagia, epistaxis, hæmoptysis, hæmaturia, metrorrhagia, asthma and phthisis ulcerosa, impotency and sterility, deafness, cataract and amaurosis, paralysis, loss of sense, pains of every kind, etc., appear in our pathology, as so many peculiar, distinct, and independent diseases."

When the reader shall have examined the old authors on scurvy, he will find that all the affections here named as resulting from an assumed internal chronic miasm called psora, as well as psora itself, are all held to be scorbutic ailments, produced by bad alimentation. Of this there is so much proof, that it were madness to deny it. We may as well deny the law of gravity. See our quotation from Dr. Cook's letter in the Appendix to our Essay on Cholera, and read this "Among the diseases which mostly appear in the diocese of Bergen, which is the most unhealthy spot in all Norway, I shall first take notice of a kind of scab or itch. This is chiefly found among those who live along the coast, occasioned, probably, by eating great quantities of fat fish, and especially the liver of the cod. [Quite a commentary on cod-liver oil.]

This is properly a *scabies scorbutica*, which may be called a leprosy, but not so infectious as the oriental *lepra;* for married people live together many years, and the healthy is not infected, though the other party has it: but if they have children, they sometimes take the infection, though not always. This distemper generally lies in the blood a long time before any eruption appears, etc."—(*See Lind*, p. 266, 3d ed.) Now who does not see that here is the latent and developed psora of Hahnemann, or the chronic inherent "miasm," the basis of all his chronic diseases?

The reader will perceive that Hahnemann has not cleared away the obscurity that surrounds primary pathology at all. Obscurely he saw a latent diathesis (several as he supposed), and he inferred they were, in essence, the undeveloped states of the worst constitutional maladies he could think of. But, this detracts nothing from his testimony in favor of the unity of disease. He saw it lying latent; no matter whether he saw double or treble, he saw all forms of disease springing from it. This makes him a witness, then, in favor of our philosophy.

Broussais on the Unity of Disease.—We had prepared, in this connection, an abstract at some length, of the pathological doctrines of Broussais, but the proposed limits of our work will not permit us to use it in illustration of our views of a one primary scorbutic pathology. Suffice it to say that his "intractable irritations and inflammations"—the sources of all diseases with him—are really substantial evidences of the scorbutic diathesis, and thus go to sustain the doctrine of a one primary scorbutic pathology. The *cause* of the irritations he does not reveal. He even regarded it as an error to seek after the primary cause of disease. But we claim to have solved the problem. The great error we think, is, and ever has been, since the days of Hippocrates, in calling groups of symptoms diseases without finding out the *cause* of the symptoms, without reasoning inductively *from cause to effect.* Broussais rails at the idea of calling groups of symptoms a disease, and yet adopts the folly. Why did he not, by looking at man as he is placed, surrounded and sustained in life and health by natural vital stimuli, examine

how their defects and changing influences became the causes of disease? and why did he not from the thousand instances of latent and more active scorbutus that must have come under his notice, acknowledged to be produced by defective nutrition; and from the pestilence that follows famine; why, I say, did he not see the inlaying and developing causes, and *deduce* the primary pathology and essential nature of all disease? Pursuing this method by inductive reasonings from facts which have been well established, *we* have shown the *primary pathology and essential nature of disease;* and have practically proved that groups of symptoms, as well as Broussais' primary irritations are but the evidences of the truth of our philosophy. Broussais' irritations and inflammations localized, are the objective signs of the scorbutic diathesis, nothing more nor less. The gastric localization is a fact—the mucous tissue is the first to show a congestion, puffiness, etc. The want of the elements of the tissues is the cause of the irritations, congestions, and inflammations. Disintegration of all the tissues is going on daily, and if the elements for repair are not supplied in the dietary, anybody can see what must happen: the problem is as plain as the nose on a man's face, as the saying is.

Backus on the Unity of Disease.—A pamphlet of some sixty pages or more, by H. Backus of Selma, Alabama, has recently appeared, taking the ground that disease is a unit. We briefly give the authors views.—"1st. If medicine is not destined to forever halt in the domain of Empiricism, if it be capable of becoming a Science, then there must be a common condition lying at the bottom of all special diseases—then, from Analogy, all pathological phenomena must be connected through a common cause. These connecting links are the *materials* of Science—the 'Stuff it is made of.'

"That, there is nothing in the present Empirical State of Medicine—nothing in the doctrine that pathological phenomena are produced by distinct, specific causes, and therefore not capable of connection—which forbids the conclusion that all may be produced by a common cause, is seen in the fact that Astronomy was once in a state of Empiricism; that Astronomical phenomena were once thought to be produced

by distinct, specific causes, and therefore not capable of connection.

"That there is nothing in the diversity of pathological phenomena which forbids the conclusion that disease is a unit, is seen in the fact that quite as great diversity in what are called physical phenomena, have been reduced to a common Law.

"'Complex and obscure as the laws of the material universe may appear to the superficial observer, surrounded by difficulties and lost in the maze of phenomena around him, he might be tempted, like the philosophers of old, to refer every effect to its own peculiar cause; a cause innate to the substance, essential to it, and animating like a soul. Far otherwise are the conclusions arrived at by him who, patiently investigating the appearances of the material world, is guided by the inductive reasoning of the Baconian school; *he* traces effects to their proximate causes, and generalizing these, is led to the discovery of a few simple laws, obeying which, atom unites to atom, and mass to mass, to form a world, rolling in its appointed sphere around the centre of our system, the great source of light and heat; *he* soon discovers that, in the beautiful simplicity of nature's laws, the apparently most insignificant, and the most gigantic effects are frequently produced by one and the same cause; *he* discovers that the very law which presides over the motions of the luminous orbs which roll in space around him, causes the scattering of flour from the edge of the millstones, and of drops of water from the wet revolving carriage-wheel. That the law regulating the falling of an apple towards the earth, is identical with that which retains the mountains on their broad basis, and the planets in their spheres. Nay, more, he learns that with such consummate wisdom have cause and effect been related, that the very same power is often sufficient to produce effects apparently totally opposed. Thus, the force by which the ocean is retained in its bed is the same as that by which the ships float upon its surface, the law which regulates the velocity of a falling avalanche, is identical with that by which the balloon ascends in the air—and the power by which the torrents in the falls of Niagara acquire their terrific

velocity, is the same which has retained, unmoved for ages, the solid rocks from which they descend.—*Bird's Natural Philosophy*, p. 99.'

"2d. The names of special diseases refer to organs, localities, and prominent symptoms, but do not imply states or causes, and therefore do not obstruct the conclusion that all are produced by a common cause.

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"3d. All exciting or predisposing causes of disease, produce a common state, marked by the terms, debility, dilatation, congestion or obstruction.

* * * * * *

"4th. A definition of the terms debility, dilatation, congestion, and obstruction, show that they are marks of each other, and marks of pressure.

* * * * *

"5. That congestion, pressure—venous congestion, a retrograde pressure of venous blood—is a *vera causa* of flux, hemorrhage, dropsy, pain, convulsions, coma and appoplexy.

"To recapitulate:—It has now appeared, 1, that there is nothing in the present state of Medicine which forbids the conclusion that it is capable of being reduced to a demonstrative science—nothing in the diversity of pathological phenomena which forbids the conclusion that all are produced by a common cause. 2. That the names of special diseases refer to organs, localities, and prominent symptoms, but do not imply states or causes, and therefore do not obstruct the conclusion that all are produced by a common cause. 3. That all exciting or predisposing causes of disease, produce a common state, marked by the terms debility, dilatation, congestion and obstruction. 4. That these terms are marks of each other, and marks of pressure. 5. That congestion, pressure—venous congestion, a retrograde pressure of venous blood—is a *vera causa* of flux, hemorrhage, dropsy, pain, convulsions, coma and apoplexy. We have thus obtained the inductive step to the general conclusion that debility, congestion, or pressure, is the cause of ALL pathological phenomena—that venous congestion, a retrograde pressure of venous blood, is the cause of all *constitutional* diseases—and if it hereafter

appears that congestion is *common to all*, that venous congestion is common to all constitutional affections, that it precedes and coexists with all, then that general conclusion will receive, if not demonstration, at least very strong support."

The deductions do not appear to us to be sound, much as we respect the effort at generalization. Every effort of this kind is valuable. The cause of all disease cannot lie far, it appears to us, from defects in the causes of life and health — the vital stimuli, food, air, and heat. The *absence* of "pressure" is not a life-sustaining principle, and therefore its *presence* cannot be the cause of all disease.

Sunderland on the Unity of Disease.—When in Boston, a month or so before putting this volume to press, we first met with the works of Laroy Sunderland, one of which is entitled "Theory of Nutrition," published in 1855. The opening paragraph reads as follows:—

"*The question stated.*—In the following pages, an attempt is made to show that pure, perfect Nutrition is health. Imperfect Nutrition is disease. Instinct is the *Cause;* Nutrition the *Means;* and Life or Health the *Result.* The true Vis Medicatrix Naturæ (Curative Principle) is, therefore, in Nutrition always. When this is disturbed, or imperfect, the phenomena occur which we denominate *Disease.*"

The doctrine of the unity of disease is not only implied in the above quoted paragraph, but it is expressly set forth in the discussion. However, the primary pathology or dyscrasia as set forth by us, is not maintained, nor, of course, how inlaid by extreme impressions of the natural vital stimuli, nor is any method of cure recognized by this author but by nutrients, and hygiene. The utility of eliminants, or of any medicines taken into the stomach is ignored. The idea of chemicals—the mineral, earthy, and alkaline bases, salts and acids being direct nutrients, does not appear to enter into this author's philosophy, much less their indirect action and utility as eliminants.

So from Hippocrates to Rokitansky, shadows of the primary pathology have been flitting before the professional mind, harbingers of the great truths we have revealed in practical medicine. Doubtless we have overlooked many testimonials

and arguments in behalf of the doctrine of the Unity of Disease. Now and then we have met with a physician who practically held to this doctrine, and who only would consent to speak and write of disease in the singular number, always using the phrase form of disease, or forms of disease. Dr. Rush only used the plural in speaking of diseases, in conformity to custom. It was the same, undoubtedly with Hippocrates, for no one has more strongly asserted the doctrine of the Unity of Disease than he. Rush and Broussais speak of the utter folly of considering groups of symptoms diseases, and of the absurdity of nosology, out-and-out; for it is virtually maintaining that ten or twelve symptoms is the *cause* of the morbid changes, says Broussais, to call a set of symptoms a disease, and another set, another disease. What stronger language can be used to enforce the doctrine of the unity of disease? All our readers must see the force and truth of these authorities, and must know that scholasticism, not science, is advanced by the present course—calling such and such assemblages of symptoms by names derived from great roots, describing their progress or changes, hunting after antidotal nostrums, and noting with microscopic accuracy the antopsic minutiæ! how long this course will prevail depends on the force of the attachment to truth that is manifested by those who see and know that we have, at last, expounded the doctrine of the unity of disease *truthfully*—have given it a living soul.

CHAPTER III.

CORROBORATIVE EVIDENCE THAT THE SCORBUTIC DIATHESIS IS PRIMARY PATHOLOGY, DRAWN FROM THE OLD AUTHORS AND LATE WRITERS ON SCURVY.

SECTION I.

ANALYSIS OF LIND'S WORK ON SCURVY, WITH DEDUCTIONS.

A few opening remarks.—The time-honored claims of the scorbutic diathesis to be considered the foundation of disease, must surely, we think, be recognized by every honest seeker after truth. Hippocrates exposes the lurking evil at every turn; and through the dim vista of ages since gone by, the plagues, pestilences, and epidemics of the world, will be seen to have reared their stupendous monuments on this submerged stratum of pathology, lying below the horizon of ordinary observation, medical or otherwise. As cultivation in music attunes the auric sense to a keener perception of sounds, so the mental vision is awakened to a just appreciation of primary scorbutic pathology, by studying the history and phenomena of the desolating pestilences that have laid waste the fairest portions of the earth, with this mental microscope in hand. Look through it at the consequences of the Irish famine, and Webster's account. Look through it at the physical or objective signs portrayed by the historian Procopius as characterizing one of the waves of mortality following the dearth that overspread fair Italy after the irruption of the Goths. It is recorded that many fed on human flesh, some districts were wholly deserted, 50,000 perished in Picenum and greater numbers in other districts, "their bodies became thin and pale [scorbutic]; the skin was hardened and dry like leather, and clave to the bones [eminently scorbutic]; the flesh assumed a dark appearance like charcoal [fatally scorbutic]; the countenance was senseless and stern," etc.—(*Webster,* vol. i. p. 93.) Or at the phenomena recorded also by Procopius as quoted by Webster at page 96, vol. i., and following, when, after deluges of rain, followed by the severest and longest drought (from January to September)

ever known, the most deadly plagues succeeded, the world over, and for which the historian asserts "no cause could be assigned but the will of God;" but the glass we look through shows to us clearly that defective alimentation and the inevitable consequence, the scorbutic diathesis, lay at the bottom of the evil. No matter if "some were seized in winter; some in summer; and others in other seasons"—no matter though "it first appeared in Egypt, spread westward to Alexandria, eastward to Palestine, and extended to all parts of the world;" or though, "if it passed by a particular country at first, it soon returned upon it with the same desolating rage which other places had experienced;" or though "it began in maritime towns and spread into the country;" and finally, no matter though the historian "Procopius calls it arrogance to pretend to assign the natural causes of this pestilence, declaring them to be undiscoverable," the glass which we look through shows that mighty pestilence to have been pillowed on the scorbutic diathesis. And notwithstanding the symptoms, as recorded by the historian are as discordant and antipodal as can be conceived, yet the whole aspect shows the scorbutic diathesis inlaid to rottenness—"some had their thighs withered—others lost the use of their tongues—to women with child the disease was certain death—those whose bodies were spotted with black pimples [petechiæ], of the size of a lentil, lived not a day," etc.

And so we might descend down the stream of practical medicine to the present day and show all the putrid and malignant phenomena of epidemics to be cradled in unfed, unnourished humanity, until each victim is a predisposed monument of the scorbutic diathesis, ready to be knocked down in his turn, by a variation of the weather, or the sight of a corpse.

Until this broad substratum of pathology is viewed in this light, all practical medicine and all pathology will continue to be a chaos. So long as scorbutus and the scorbutic taint are regarded as one and only one individual disease, among fifty others, or five hundred, or fifty thousand, whatever artificial limit a refined scholasticism may finally fix on, no truly scientific basis can be found for practical medicine to rest on.

So long as the pathology of scorbutus and the scorbutic taint are sought after as resulting from a given error in diet, and the consequence of this error a uniform manifestation of objective signs and symptoms, rather than studying and regarding it as the comprehensive natural result or consequence of any and all impairments of the nutritive function, so long will opinions conflict, observations stand discordant, and the true cause, nature, pathology and whereabouts of the submerged evil remain a sealed book, and all pathology above it "a mass of things but nothing wherefore." Regarded in this light, all variant opinions are harmonized—all testimonies reconciled —the cause, nature, hydra-headed character, and protean manifestations of the evil are explained, and all the mystery that has forever hung like a cloud over the phenomena of epidemics is brushed away, and a clear sky in medical philosophy opened to view.

Historical facts in regard to Lind's Work.—The first edition of Lind's Work appeared in 1753, after the pestilential period during which Lord Anson circumnavigated the world, viz., from 1740 to 1744, for he says in the preface that the publication of Lord Anson's papers led him to write on the subject. The second edition appeared in 1757 ; and the third and last, in 1772, founded on extensive further observations in Haslar hospital, through the world-wide blight of 1759 to 1762.

The work is a valuable one, but it is valuable more on account of the historical information it contains of the writings of others, than for his own original views, which have doubtless, had a tendency to retard truth. Unfortunately he fell into the growing errors of the Sydenham school, and added the weight of his authority to the nosological classification of diseases, scurvy holding one place only, the same as gout or pleurisy ; the doctrine not being admitted that the scorbutic diathesis is the latent source or foundation of diseases.

Preliminary Discourses—First Discourse.—He opens his work with four preliminary historical discourses. In the first he gives a critical history of the different accounts of the disease ; differing from those authors who thought it contagious in any

form as well as from those who had observed the disease to change, or who considered any symptoms as pathognomonic but putrid gums and swelled legs; animadverts severely on Eugalenus, for asserting that many or most forms of disease were to be treated antiscorbutically in order to cure them; (that which Dr. Barnes of the London Hospital now asserts;) accuses him, (Eugalenus) of "intolerable vanity and presumption" for asserting that he could thus cure quartan agues in ten days; and of "extreme ignorance" in ascribing proneness to faint in child-bed women to a demonstrative sign of scurvy. (What would Lind think of our ignorance in ascribing not only fainting but death in child-bed women to said cause? or if we were to assert we could cure quartans or any other so-called malarious fevers in two days?) He abuses Willis, as more irrational than Eugalenus, for his *regional* arrangement of scorbutic diseases from head to foot, and cites us to Sydenham as a model physician who opposed the views of these generalizationists

Second Discourse.—In the second discourse he inveighs against the views of the older writers, in their divisions of this disease, into hot and cold, acid and alkaline scurvies, introduced by Willis, and the divisions and classes, "multiplied by others without end, in which Gideon Harvey, physician to King Charles II., excelled all, who made out above twenty species, such as flatulent, cutaneous, ulcerous, painful, English, Dutch, sea, land scurvy, &c., &c.;" he dissents from the views of those who consider the hypochondriac disease a form of scurvy; animadverts on the idea that remedies of an opposite nature can be useful in the same disease; abuses Hoffman, Boerhaave, and Moellenbrock for their scorbutic acid, and alkaline humoralism, and contends for the *dissolved* state of the blood, or the *putrid* humoralism of scurvy!

Third Discourse.—In the third he very justly disabuses the reader of any propriety of the distinction into land and sea scurvy—and then relapses again into his eternal abuse of generalizationism in regard to the scorbutic taint, and depicts the prospective evils of the doctrine in the following terms;

1st. "Young practitioners in physic, who, being provided with such a general name as that of scurvy, comprehending

almost all diseases, will think themselves at once acquainted with the whole art of medicine," and prescribe accordingly!

"2d. Older practitioners by referring many various and uncommon diseases to such imaginary causes, will deprive the world of the true improvement of their art, which can only be expected from accurate histories of different cases, distinguished from each other with the same accuracy that botanical writers have observed in describing different plants:" [!]

After the last paragraph our readers can judge of the calibre of Lind's mind in medicine, and of his freedom, or otherwise from professional bigotry. Compare the above with Dr. Rush's views, p. 160 of this volume.

Fourth Discourse.—In the fourth discourse he dissents from almost all the old writers in regard to the scurvy, being "connate, hereditary and infectious."

We have shown it to be connate and hereditary, in our Essay on Cholera Infantum by sundry quotations, and although we have not expressed any opinion very decidedly whether any forms of it are infectious or not, because we have not considered this a matter of first importance, still we incline to the view that the typhus and other forms are infectious in the common acceptation of the term, and we have suggested an explanation of the law. See p. 68, this volume.

The causes of Scurvy according to Lind.—The causes of scurvy next engage Lind's attention. Sea salt is not the cause, but salted meats and fish are not innocent—the want of fresh vegetables and fruits not the chief, though possibly the occasional cause, differing from Dr. Budd—not the usual and natural consequence either of vitiated air in ships, and jails, as the malignant ship or jail fever is, though he admits this as an aggravating evil. "*The principal and main predisposing cause* to it is a manifest and obvious quality of the air, viz., its *moisture.*(!) The effects of this are perceived to be more immediately hurtful and pernicious in certain constitutions; in those who, from a lazy, inactive disposition, neglect to use proper exercise; in those who are much weakened by preceding sickness; and in those who indulge a discontented

melancholy humor: all which may be reckoned the *secondary disposing causes.*" He admits the power for evil of bad diet, without a knowledge of the reason why—he says, "if a man lives on a very slender diet, and drinks water, in the fens of Lincolnshire, he will almost infallibly fall into an ague;" which is one form of scurvy, as we have shown.

"Intense cold, during the hard winters, as in the north of Europe, with the diet the poor use at that season, infallibly gives rise to it—in damp, marshy, fenny low counties, subject to inundations, &c., it is endemic; the lazy, the melancholy, the weakly, are its victims."

We cannot forbear to remark that all this is very foggy, compared with defective alimentation; defective aeration; and defective calorification, as causing disease. To be sure sloth aids the evil tendencies, as does every violation of the natural laws of hygiene. Damp air is pernicious, because it robs the system of caloric. Hitherto etiology has been wofully in the fog.

The diagnostics of Scurvy according to Lind.—The diagnostics then are considered—pallor is first named—universal lassitude, and breathlessness on exertion—itchy, swelling red gums, becoming spongy, putrid, and fungous: "the pathognomonic sign perhaps of the disease" [!], hemorrhages from gums and other parts of the body—skin dry with petechiæ on extremities, more rarely on face—swelled legs—bruises and cicatrices first show the scorbutic discoloration—ulcers discharge a fetid sanies, and shoot up the "bullock's liver fungous"—slight bruises and wounds degenerate into ulcers —all old ailments, aches, rheumatic pains, or present complaints, whatever the seat, are aggravated—pains in the bones, back, and fugitive pains in different parts—most frequent seat of pain the breast, with stitches, oppression and cough—all epidemic or connate diseases, however opposite, are swallowed up in this,—and small-pox, measles, and all putrid fevers, &c., coöperate with the scorbutic acrimony to produce the most fatal and malignant symptoms—fevers only adventitious, has seen several to have intermittent fevers in the beginning —costiveness, or fetid diarrhœa present, and urine various, generally high colored, soon becoming rank and fetid—pulse

various, commonly slower and feebler than in health—petechiæ and discolored patches, always level with the skin, or flat—legs sometimes scurfy—miliary eruptions rare.

Second stage, use of legs lost by contraction of flexor tendons in the ham—faintness on motion—echymoses—hard swellings in calves of legs and other large muscles—sudden death on being moved or exposed to fresh air—profuse hemorrhages from nose, gums, intestines, uterus, ulcers, &c.,—many take on painful dysenterics, and others discharge great quantities of blood without pain—gums excessively fungous, stench horrid, aspect gangrenous—teeth loose, aed often fall out—caries rare, but when it occurs painful and malignant—appetite mostly good.

Third stage, scene of misery dismal—old wounds and ulcers re-open—legs burst, and bloody fungous ulcers follow—colliquative putrid fevers attended with petechiæ occur in some cases. [What are these but cholera and typhus? and what but scurvy?] fetid sweats—profuse evacuations of rotten blood by stool, [dysentery;] urine, [hematuria;] from lungs, [hemoptisis;] nose, [epistaxis;] stomach, [hematemesis,] etc.; in others—jaundice, confirmed melancholy, [hypochondriasis;] rigor, colics, obstinate costiveness in others—fatal dropsy is a common termination, either of the chest, [hydrothorax,] belly, [ascites;] or general anasarca, [general dropsy,] sudden death from dyspnœa and pectorial oppression common—and many more symptoms, or why not say diseases?

Now who does not see that Lind belies his own assertions? for numerous other diseases, which he contends are *distinct* from scurvy, he admits, at last, carry off the poor victims! where is the line of demarkation? where does the scurvy end in these cases? Where do they catch those putrid diseases on the day of their death, or just as they are ready to die of scurvy?

The Prognosis in Scurvy according to Lind.—The Prognostics follow. Here it is asserted that the disease is either *natural* or adventitious; admitting its hereditary transmission which he before denied—but however induced still the same, and curable by the same remedies—those weakened by other distempers most liable, intermitting fevers and salivation

especially—those who have had it once most certain to have it again if exposed to the causes—different seasons affect it—cold, damp winters inlay it—exercise will cure the first stage, without fresh vegetables—second stage patient, cannot take exercise, and cannot be cured without vegetables—oranges, lemons, etc., pectoral symptoms of all most dangerous—at sea prognosis difficult, as those but slightly affected often die suddenly—first favorable symptoms are soluble bowels on the use of fresh vegetables, and moist skin—the scorbutic *dysentery* and pectoral symptoms most difficult to remove—a deep taint often ends in *consumption*—such deeply inlaid taints also subject those who recover to rheumatisms, stiffness in the joints, cutaneous *eruptions*, etc.

Does scurvy, then, according to Lind, really appear but one simple malady? Does he not rather become his own falsifyer?

The Prophylaxis of Scurvy according to Lind.—For the prevention of this disease at land, a warm, pure air, with a diet of easy digestion consisting chiefly of a due mixture of animal and vegetable substances (which is found to be the most wholesome food, and agreeable to the generality of constitutions) will for the most part prove sufficient.

Those living in wet localities, cellars, and on the lower floors, must keep constant fires made of aromatic woods, [the kind, whether sandal, guaicum, sassafras, or mahagony, is not said;] and eat broths of fresh meats and recent vegetables, [*if to be had,*] if not of preserved roots and fruits [God help the poor;]exercise, cleanliness, and contentment finish the requirements. Removal from exposed situations is recommended. In towns and garrisons, besides the above, extra clothing is advised. At sea, the clarified juice of lemons and orange evaporated to the consistence of syrup. He tried the comparative efficacy of lemons and oranges, of cider, and of elixir vitriol in the cure of scurvy at sea, and found the first mentioned much the best, the cider next, and the last, elixir vitriol, of comparatively but little service. These fruits are thought adequate to cure all cases of *real* scurvy—Willis and others at fault, again, for calling "legions of distempers" scurvy, which these most approved antiscorbutics fail to cure;

and Boerhaave and many others as much at fault for esteeming it the masterpiece of art to cure it.

We will propound a question here—will lemon-juice cure a consumption produced by *deep taints* of scurvy, which Lind says often occurs?

Consumption is nothing but a localization of scurvy—it differs not essentially from the general scorbutic dyscrasia that caused it to break out locally in ulceration of the lungs. Lind crosses his own track too often: but to return.

Besides fresh and preserved fruits and vegetables, fermented liquors of all sorts are found beneficial in this disease —cider best—fermented juice of currants, gooseberries, elderberries, etc., advised—spruce beer, and small beers of every kind recommended—a decoction of pine tops, or bark and wood, fermented with molasses, esteemed—wine recommended—the food and drinks of persons convalescing from sicknesses to be acidulated with oranges and lemon-juice—and exercise not to be forgotten — during a scorbutic moist constitution of the air, additional clothing, change linen often, attend to diet, cleanliness, and use the flesh-brush—raw onions recommended—if spirits are used, to be diluted.

The cure of the Scurvy and its symptoms, according to Lind.—Experience shows that the cure of the adventitious scurvy is very simple, viz.: a pure, dry air, with the use of green herbage or wholesome vegetables, almost of any sort, will, for the most part, prove effectual.

Food light and easy of digestion, meat and vegetables, soups, broths, fruits, salads, scurvy-grass, cresses—summer fruits gathered by the patients, by which exercise is enforced, prove specific—if costive, open the belly with tamarinds and prunes, and add diuretic salts, and promote sweat by camphor boluses and decoction of the woods. It requires a long continuance of vegetable diet, and proper regimen, as many seemingly cured speedily relapse, as sailors going abroad from the hospitals—*those once deeply infected forever apt to relapse* —some constitutions very prone to it—such to have medicinal helps in addition to diet and regimen. The indications are, to keep the emunctories open for the gentle evacuation of the scorbutic acrimony, viz.: belly, urinary passages, and skin.

Here medicines are to be aided by heroic, anti-scorbutic regimen, and milk is highly useful, being a vegetable emulsion, and whey also. And *sal polychrest*, being purgative and diuretic, highly adapted; it also opens the skin by keeping warm in bed. The *succi scorbutici* of the E. and L. Pharmacopæias recommended, mixed with whey, and taken largely, so as to sweat the patient profusely twice or thrice a week. It is an evacuation of all others scorbutic persons bear the best. Warm baths, medicated with aromatic herbs—spruce beer, mustard seed, ale, etc.

Special remedies for urgent symptoms.—Tincture of bark in brandy for spongy gums, or alum, and gargles of mineral acids, as *spt. vit.*—the fungus, if needful, to be cut away—eating or spreading ulcers to be touched with the mineral acids—epispastics and sinapisms to remote parts of the body for salivation, also clysters and gentle purgatives—support the strength with cort. peruv., elix vit., and mulled wines. For swelled legs, friction with aromatic gums, fomentations, and steaming under blankets night and morning—if ulcerated, bandage—in dangerous hemorrhages, the mineral acids internally—for pain in the limbs, back, breast, or generally fixed or wandering, squills, and by draughts of wine vinegar, and gruel, force a sweat.

There remain two symptoms of this disease, which of all others are the most difficult to remove, even though the patient enjoys the benefit of the purest air, with the most proper anti-scorbutic food and medicines. These are, the scorbutic dysentery in some; and in others a hard-bound cough, accompanied with dyspnœa, pain and disorders of the breast. This last often ends in consumption, while the former, or flux, is very troublesome to stop, and sometimes also proves fatal.

We find Lind here adopting what he so much condemns in Eugalenus, Willis, Boerhaave, and others. He cannot get by the fact that scurvy sometimes ends in consumption, dysentery, etc., which he here expressly calls "symptoms of this disease," scurvy.

Scorbutic diarrhœas at sea are not suddenly to be stopped. They are to be moderated by strengthening the tone of the

stomach and bowels, and promoting perspiration. Opium, strong rough red wine, astringent diet, alum, acidulated styptics.

In scorbutic dysentery the austere acid fruits, and greens—an infusion of ipecac (small quantity) in brandy—rhubarb purges, stomachic bitters, elixir vit. chalybeates, *as in all other scorbutic cases.* Our new views of the treatment of summer complaints are here sustained.

For scorbutic pectoral disorders blistering and issues, horseback riding, country air, milk and vegetable diet, and expectorants. Besides the consumptive disposition now mentioned, a dropsical habit is now and then contracted. Lind, then, endorses dropsy as scorbutus and very properly, for it is only a scorbutic serous hemorrhage into the shut sacks, or from the serous surfaces, as cholera is from the mucous.

He advises, if the gums have become "sufficiently hardened," (how hard he does not say,) a gentle course of mercury with diaphoretics. The same for remaining numbness, and chronic rheumatic pains—crosses his track again. Why not adhere to anti-scorbutics, depend on them alone to cure the sequellæ?

Evacuations dangerous.—As to evacuations in scorbutic complaints, especially when advanced, they are dangerous—the patient often dies soon after V. S.—laxative fruits are better than medicinal purges—vomits equivocally serviceable. Sudden changes of air, surprise, or shock of any kind, or exertion, as ascending the shrouds of a ship, often fatal—after long deprivation of fruits and vegetables, treat such as you would persons almost starved to death; if they eat of them voraciously, a mortal dysentery is apt to follow.

Theory of the Disease according to Lind.—The solids, continually abraded, are returned to the circulation unfit for use; hence a daily supply of proper food is required to supply this constant waste both of the solids and fluids. Thus the bodies of all animals are in a constant state of change and renovation, by which they are preserved from death. There are two evacuations chiefly by which the blood is freed from these putrescent noxious humors, viz.: the urine and insensible perspiration.

Now the effect of *cold* is to constringe the whole external capillary system. When the cold becomes intense, the animal heat is so overcome, that the digestive system (as in a person starving with cold) is chilled and enervated [nutrition is interrupted]—witness the poor in long, cold, damp winters. This is the strongest predisposing cause of scurvy. [This is sound philosophy.]

Who cannot see that here is virtually contained our doctrine of impaired nutrition? It is just it and nothing more; and this inlays the scorbutic diathesis. A better illustration of the theory of the disease, and effect of cold winters cannot be drawn. Extraordinary summer heat is just as prolific a cause of scurvy by overtaxing the capillaries and inordinately expanding them, and thus interrupting the function of nutrition. If added to these causes the food is destitute of the proper elements of nutrition the soluble mineral salts especially, the whole circle of vital stimulants is defective.

Lind knew nothing of organic chemistry. He lived and wrote before Priestly discovered the constiutents of atmospheric air. He could not enlighten us much farther then, as to the true theory of scurvy, than he has done. "To nourish the fluids," he tells us, "is to replace a liquor of the same kind and quality with that which is gone. The nourishment of the solids and fluids is furnished from the aliments;" but he knew not the chemistry of that necessary liquor, nor of the solids or fluids it needs must replace, or the system fall into scurvy. He did well for his time, but surely we can do better now. Beyond the foundation above abstracted, his further theory of the disease is at this day useless.

Dissections—Anatomical characters.—In the first stage of the disease the blood in V.S. ran in streaks of light and dark shades [who has not seen this]—later, thin and black, and after standing turned thick and of a dark muddy color, surface greenish, without separation of its parts, [late observations prove this a mistake, see Andral on the blood in scurvy, p. 73] —and in third stage black as ink; if stirred or whipped, fibrin appeared like wool floating in a muddy substance. After death the blood was uncoagulated in the veins, and appeared a black and yellow liquor, or if extravasated, the same—in the

frequent hemorrhages before death from whatever part, the same. The heart, white and putrid, and cavities filled with corrupted blood. Lungs blackish and putrid, and more than a quart of bloody serum in thorax. Liver pretty sound; spleen corrupted and rough as if rubbed on a stone.—(*Dissections of Lord Anson's, and Cartier's crews.*

All those who died of pectoral disorders had water in the chest. [Hydrothorax.] Breast, belly, and other cavities filled with colored serum, [dropsies,] so corrosive as to skin the hands of the operators.[!]

Some dying suddenly of oppression of the breast, no serum found there, but adhesions of pericardium to lungs, pleura to diaphragm, or all the thoracic vicera one morbid agglutinated mass deprived of motion.

All who died suddenly without apparent cause had the auricles of the heart as big as one's fist [dilatation] and filled with coagulated blood.—Others had their muscles gangrened and gorged with putrid blood, falling to pieces on handling them; in a youth who died suddenly with dreadfully ulcerated gums, tongue, cheeks, etc., the bowels were found corrupted. [The meaning is ulcerated, probably.]

Some with no other symptoms of scurvy but slightly ulcerated gums, had red, hard tumors over the limbs and body, large buboes in groins, arm-pits, surrounded with matter, and muscles of their arms and thighs also, and interstices filled with it—the swollen discolored stiffened legs, were rendered so by extravasated blood—the hard swelled muscles had coagulæ fixed in them, causing their rigidity—the colored spots on the skin were owing to extravasated blood, and according to the color of the blood so were the spots—scorbutic ulcers proceed from bloody tumors—fatal hemorrhages proceed from corroded blood-vessels.

Where the bones were heard to grate, we found the epiphises separated—when a like but faint crepitus was heard in breathing, the cartilages of the ribs were found separated—where serum was found in the chest, the ribs were carious for three or four inches anteriorly, and full of corrupted matter—the capsular ligaments were detached in some subjects, and the synovial liquor was green—all under 18 had the epiphises

separated—in all the mesenteric glands are enlarged, in some macerated—in a few the liver hardened, as it were petrified —generally the spleen was three times its normal size, falling to pieces, as if composed of coagulated blood—sometimes the kidneys and breast were full of imposthumes.

What was surprising the brains of these poor creatures were always sound and entire, and they preserved their appetite to the last.—(*Poupart's dissections in St. Louis Hospital, Paris*, in 1699.)

Deductions.—In reasoning upon the causes of the symptoms and morbid appearances, Lind is so far behind the present state of medical science, that his hypothetical notions would hardly edify, in the main, were we to give a faithful abstract; and still on some points he is felicitous, considering the state of organic chemistry and physiology at the time he wrote. We will briefly give some of his points.

Deductions drawn from the state of the blood.—"In such a state of blood as appeared in both the living and dead bodies, we have no reason to be surprised at the frequent hemorrhages from all parts of the body, fluxes, dysenteries, etc., [summer complaints of every description,] to which such people are subject; nor at its bursting out from the scars of old wounds in Lord Anson's crews. * * * The solids are in so weak a state of cohesion, that the vessels are apt to burst and the blood to be extravasated."

The above an error of fact as well as deduction.—This, until recently was the doctrine; but Andral, see p. 73, has shown that the blood is not dissolved, neither putrid, but always coagulates, holding more coagulable lymph or fibrin than healthy blood, which is confirmed by Busk and others; and Simon holds the fibrin to be the waste of the tissues in the road of excretion, effete matter, and plus in disease. These discoveries upset the *facts* as well as the *deductions* of Lind.

The true doctrine.—No new doctrine has accounted for the facts, as they now stand, posted up by the analysis of the blood that we are aware of. Our pathology of scurvy accounts for all the phenomena. Nutrition being suspended, the ingesta not containing the elements of the tissues, they are porous from disintegration, and leak as a matter of

course; the blood too is in the very same predicament, thin, watery, weak, with less cohesion between its constituent parts; hence, here serum is effused, there fibrin, etc., generally colored with the broken up globulin. The minerals of the blood, constituting the hydraulic cement, are wanting, that is, a fresh supply, for though there may be about the normal proportion present, still they must be in the road of excretion, and derived from the worn-out tissues, where a one-kind of diet has not afforded fresh supplies. We hold that these conclusions are warranted and sustained by the facts. In the light of organic chemistry, this is a plain matter of fact deduction. It is not only explanatory of the pathology of scurvy according to Lind, but according to Eugalenus, Willis and others; it is *primary pathology*, or the basis of all pathology.

Deductions drawn from the callus of bones.—Lind was a thorough-going humoralist, as appears in numerous places, and nowhere more conspicuous than in his illustration of the *scorbutic acrimony of the fluids*, by which he says "it is easy to account for those remarkable cases which occurred likewise in Lord Anson's squadron, where the callus of broken bones, which had been completely formed for a long time, was found dissolved, and the fracture seemed as if it had never been consolidated. * * * * * *

"Now if the humors of the body in the advanced stage of this malady are capable of acquiring so corrosive a degree of acrimony, that like a *menstruum*, they work upon and dissolve the *cellular texture* [italics ours] of the very bones, it is natural to suppose that *the nutritious particles are here so much depraved in the very beginning* [italics ours], or where there is only a scorbutic habit of body, [which means the scorbutic diathesis,] that *no callus can be formed* [italics ours], of which Dr. Mead furnishes us with a remarkable proof."

An error of fact, again, as well as deduction.—The *cellular tissue* is not dissolved, but the *mineral* portion of the bone, or the lime is absorbed. A confirmation strong as holy writ of the proof of the truth of our theory. Lime not being afforded in the ingesta, and it being the physiological law that waste and repair must go on, the lime is all returned to the

blood to be excreted, the body falls into scorbutus, and old fractures disunite, and recent ones refuse to heal under this "depravity of nutrition:" hence we have *ununited fractures* according to Lind, attested by Dr. Mead; but not discerned by surgeons of these days as being caused by a scorbutic dyscrasia: such a thing is never hinted in any work, or in the lecture room.

The remark made by Dr. Rush on the misspent efforts of Dr. Darwin's genius, seems to us quite as applicable to Lind. He says, "diseases like vices are necessarily undisciplined and irregular. Even the genius of Dr. Darwin has not been able to compel them to move within lines." Lind abused every author who held that the scorbutic diathesis was the foundation of other diseases than scurvy, characterized by the gum and leg smptoms, and he falls into the same conclusions at last, that he condemned in others. What is an ununited fracture, according to Lind, but a scorbutic condition? nothing. Just so we find him speaking of fever, dysentery, diarrhœa, consumption, hydrothorax, ascites, anasarca, and many other forms of disease, although he is the great champion of the doctrine of the specific cause and individuality of diseases. Lind was no doubt honest, and tried to be consistent, but failed. We are willing to accord to him much praise, however, for his industry in collecting the literature extant on scurvy; but he, as well as his predecessors and cotemporaries were unable, in the then state of medical science, to explain the pathology of scurvy; and as the doctrines of *specific pathology*—rather, it should be said nosology — prevailed, everybody has taken it for granted ever since, that, the general sense was right. That the sober second thought will finally correct the errors of our predecessors, in this matter, there can be no question.

The world-wide blight of several years' duration, during which Lord Anson circumnavigated the globe, was the cause of Lind's production, as we have said: for an account of this pestilential period, see Webster on Pestilence, vol. i.

Lind's Supplemental Papers—"*Scurvy at Swednitz, Oswego, Quebec and Crown Point.*—Since the second edition of this treatise was published, we find the scurvy to have made

great devastation in different parts of the world. In the years 1757 and 1758 the Austrian garrison in Swednitz, a fortress in Silesia, during a three month's blockade, lost three thousand five hundred men; most of whom, if I am rightly informed, died of this disease. * * * * During the winter 1756, the unfortunate English garrison at Oswego was reduced by it to so great distress, that among seven hundred men, they often could not muster eighty fit for duty, a number scarce sufficient to protect them from the incursions of the Indians. * * * Again, in the winter of 1759, the troops in America suffered uncommon distress from this disease."

This was a pestilential period, again, the world over. These supplemental papers mostly originated during this world-wide blight. "No part of the world," says Webster, "seems to have escaped a share of unusual mortality in the period between 1759 and 1763."—(On Pestilence, vol. i.)

Lind's Experience.—"In the years 1759 and 1760, there was an uncommon appearance of the scurvy in Hampshire; whether it prevailed in the other counties of England at the same time, I cannot say. It first showed itself at Haslar hospital, in the month of April, 1759, by a slight attack on such as were recovering from fevers. It continued all that summer and autumn, until December, and the two following months, when it became much more universal and difficult of cure, and it was uncommon for a person long confined to bed to escape it. Men who had never been at sea, as well as sailors, who in several voyages to both Indies had never before been afflicted with it, were equally seized: many of whom had been for three weeks or a month in the hospital, living on excellent fresh beef, soups and greens. I was at first alarmed with its appearance, and ordered broth with greens to be given to all the convalescents by way of prevention, *as also to such as were in fevers*, notwithstanding which several were attacked with it, though few died.

"The disease raged at the same time among the French prisoners in the castles of Colchester and Winchester. Those prisoners had no fever, nor the appearance of any other distemper among them.

"Doctor Welch, now an eminent physician at Winchester, then my colleague physician in Haslar hospital, observed several persons afflicted with this disease in different parts of Hampshire, and among others a gardener's wife, *who was very ill of it, notwithstanding her using vegetables.* [Italics ours, all through.]

"If it was not so generally remarked by the apothecaries in the country, it was owing to its being a disease little known. A slight attack was not suspected to be the scurvy: [mark this], and most people were unacquainted with the symptoms of the disease. It extended to ships lying at anchor at Spithead, as also to such as were hovering on the coast.

"The Jason and Deptford were constantly employed as a convoy for merchant ships from Plymouth to the Downs, touching at Portsmouth in the passage. They were seldom above forty-eight hours at sea, and for twelve months their men had not eaten any salted provisions oftener than once or twice in a fortnight; yet, notwithstanding the constant use of fresh beef and greens, the companies of both ships became greatly afflicted with the scurvy."

This being a pestilential period, the greens and cattle were sickly by reason of extraordinary seasons, rains, frosts, droughts, and other blighting influences.

"In Haslar hospital, the appearances of the disease were various. Such as had long been confined to bed, complained of excruciating pains in their limbs: as there was often no appearance of a hardness or swelling, those pains were sometimes judged to be the effect of the *rheumatism.* But, in six or seven days, an eruption of small, rough, miliary pimples on the fore-part of the leg, or the legs becoming of a livid hue, sometimes streaked, at other times quite red or black, showed plainly the nature of the distemper. *The gums were not always affected,* [ah, indeed.] When going to bed, seemingly in good health, men were surprised to find their thighs streaked with large livid and red stains. A few, who when in fevers had been blistered, complained of uncommon pain in the blistered parts, which were found altogether black for several inches round their circumference. The cicatrices of

some old wounds, and the redness usual in those parts, where ulcers formerly had been seated, became also black. In one person an accidental slight scald by hot water falling on the foot, from a bright red changed in twenty-four hours to a dark color, as if the part was mortified; but those seemingly frightful appearances were unattended with danger. Several who became scorbutic complained of their old hurts and bruises; upon examining the parts they were often found hard, discolored, and very painful to the touch.

"Several complained of extreme weakness and a pain of the back. Most of universal pains in the bones, chiefly of the legs and thighs, which were sometimes mitigated by an appearance of the red and livid blotches. Sometimes the nose, at other times the gums bled profusely. *Such as died of fevers had their legs several days before death covered with scorbutic small spots, of a purple, red, or black color.* In a person who was *dying of the flux*, a large, hard, painful, *scorbutic swelling* arose during the night on the back of his hand. In another dying patient a livid and streaked swelling formed itself on the inside of the arm below the elbow: *the gums and legs of both being unaffected.*"

Lind sits in judgment on his own book—admits what he had before condemned in Eugalenus. "The distemper attacked some with a sudden lameness, while walking in the fields belonging to the hospital; when they were brought into the house we often discovered a red stain or hardness about the ancle, or some other part of which they complained. The gums of several bled, being sore and spongy, without their having any other symptom of the scurvy. One person was greatly alarmed by a spitting of blood for three days, which I found to be no more than the scurvy affecting his gums. This disease having been very troublesome, but not fatal to above four persons in the hospital, lessened considerably in its frequency from May to August 1760. It seemed to disappear entirely in October and November at Haslar, as also at Polchester castle; and, as I was informed, much about the same time at Winchester. When I was at Winchester, in January 1761, I did not see one man who had the scurvy among four thousand prisoners.

"The account here given does not detract from the anti-scorbutic qualities of green vegetables, as it is probable that without their assistance few of those patients would have recovered."

During a succession of blighting years, vegetation becomes scorbutic, and vegetables and fruits have less efficacy in preventing and curing scurvy. It is amusing to see how Lind admits other diseases, as fevers, fluxes, etc., to be scurvy, and reiterates that the gums and legs are not always affected, his former *pathognomonic* signs.

Letter from a Naval Surgeon on a fatal scurvy in the East Indies—1762.—"Our long cruise in expectation of Commodore Kepple's arrival, in order to the attack of the French settlements at Bourbon and Mauritius, proved very fatal to our East India squadron: having lost on our return to Madras eight or nine hundred brave fellows by an *extraordinary species of scurvy*. And, as the crew of the America was as much, if not more afflicted with it than any other ship, so I am enabled to furnish you with a more minute detail of the fatal and diversified symptoms of this calamity.

"The disease most commonly began with a soft swelling of the legs, which ascended to the thighs, enlarging them to an enormous size. This swelling afterwards extended itself to the belly and scrotum, gradually mounted up to the breast, and sometimes reached even to the head, so that all the cavities of the body being filled and distended with water, as well as the skin, the patients labored under an universal dropsy, accompanied with swelled, putrefied gums, a stiffness at the joints of the knees, livid stains, and scorbutic spots." Here was epidemic general dropsy! and it was manifestly nothing but a form of scurvy.

"The patients had seldom any fever in the first stage of the disease; but when the swelling had once reached to the belly, by its hindering the proper action of the organs of respiration, a difficulty of breathing and a *smart fever came on*, especially towards the evening. * * * An obstruction of the perspiration, and a difficulty of making urine, occurred almost always at the commencement of the disease, and were increased as it advanced to its height. The parts of genera-

tion were in almost every patient distended with water to a vast and enormous size. I frequently by tapping emptied them of three pints or two quarts of water."

Hydrocele, then, is a form of scorbutus. We will prove every disease to be scorbutus yet, by Lind's work.

"The patient from the first attack seldom survived seven weeks, few lived longer, many expired in a shorter time. They all died of a suffocation from water, except those from whom the water was constantly drained off by the means before mentioned [scarification and tapping]; and they, after languishing for some time, expired at length when reduced almost to perfect skeletons, all the fluids of their bodies having been quite exhausted."

This shows that scurvy occurs within the tropics, and that dropsy is nothing but scurvy.

Mr. Ragget on Scurvy, in the East Indies—1759.—"I went into the Weymouth a few days before she sailed from Bombay; where I found many men laboring under the scurvy, with large putrid ulcers, and some had carious bones. In our passage to the Coromandel coast they became much worse; but as the French squadron was hourly expected, we were permitted to send only a few of them on shore, so that I had in the ship, above 80 patients afflicted with the scurvy, and bad ulcers. * * * In the months of July and August, I opened near *seventy large swellings in the groin, proceeding entirely from the scurvy.* * * * Several of our men from slight accidental scratches on the legs (by a quick putrefaction supervening) had the bone of their legs laid bare a considerable length, in spite of every powerful antiseptic medicine."

What, plague, with a bubo in the groin, scurvy? to be sure, nothing else. All the putrid fevers ending in death in a few hours or a few days, are only intensified forms of scurvy.

"A small ulcer of the size of a six-pence, would spread in forty-eight hours, to eight or twelve inches in circumference, laying several inches of both bones of the leg quite bare."

Here is the law of all ulceration, venereal, cancerous or otherwise, whether in the bones or soft solids, explained.

Dr. Huxham's Letter.—"In answer to your question, whether we meet with many truly scurbutic cases in Devonshire and Cornwall, amongst those who constantly live at land, I assure you we meet with very many patients of that kind, and even of such as are deeply afflicted with it, especially in low marshy grounds, and situations nearly bordering on the sea, or the salt marshes. * * * In these places the scurvy is as it were endemic from the *lower degrees of it, viz., pustular eruptions, itching spungy gums, sallow complexion, lassitude and inactivity, weak pulse*, black and blue spots up and down the arms, legs, thighs, etc., a foul greasy urine loaded greatly with salino-sulphureous salts, to its greatest degree of virulence, accompanied with fungous, livid, bleeding gums, horribly stinking breath, a sallow bloated countenance, vast dejection of spirits and *faintings, a swelled belly, gripes, the bloody flux, profuse hemorrhages* from various parts, a *difficulty of breathing*, especially *upon the least motion*, very large black, blue, yellow spots, swellings, contractions, and stiffness of the lower limbs, and sordid, spongy, *livid ulcers on the legs*, etc., with a *load on the breast*, and an anxiety *scarce to be expressed.* I find this disorder chiefly among those * * * *who eat very few vegetables*, and live mostly on flesh and fish, eating them not only at dinner but supper; that lead inactive lives, and *indulge too much in ease and appetite;* nay, *many of our sedentary tradesmen very often fall into it*, when they constantly drink the gross ale and beer of this country, and live chiefly on fish and salt provisions. On the contrary, the active, laborious husbandman, who drinks chiefly cider, eats much herbage, fruits, etc., and breathes a free, open, air, seldom or never is afflicted with it."

Now does any one suppose Huxham was ignorant of what symptoms constitutes scurvy? and he classes the eruptions, and pale feeble habits, all as scurvy: just as certainly scurvy as the bloody flux or other hemorrhages, or spongy gums, or stiff legs, or the last stage of it in any form. The causes too, are palpably, *defective alimentation, aeration and calorification*, aggravated by indolence, all which impair nutrition. How exactly our doctrine is substantiated by this letter.

Dr. Cook's Letter on Scurvy in Russia.—I here send you some brief remarks I made in general upon the scurvy in Russia, Tartary, etc., in all which countries it is a frequent and dreadful disease. * * * In November, all the rivers, lakes, and marshes, are quite frozen over, and the whole country is covered with snow; which continues until about the beginning of April. At this time the snow suddenly melts away, leaving the earth covered with grass, and many wholesome vegetables. The spring is so very short, that the inhabitants are scarcely sensible of it: for in less than fifteen days the weather becomes excessively hot; and the cold frosty winter is suddenly expelled by a very warm summer, that continues until the month of September; during which time the weather is very hot and moist. When I was there [at Taverhoff] in the years 1738 and 1739, [a pestilential period—See Webster, also Census of Ireland, 1851], 27,000 boors were employed in cutting wood, and preparing it for building ships for the use of the army; as also about five or six hundred sailors, who were their overseers, and between two and three thousand soldiers, who guarded the boors to prevent their making an escape. In the month of February 1738, the scurvy made its appearance. The boors were not so much afflicted with it as the sailors, nor the sailors so much as the soldiers. Many, both sailors and soldiers, were sent to our hospital this month; but their numbers were greatly increased in March. Towards the latter end of April they were mostly recovered, and many were discharged from the hospital. In June none remained except the most inverate cases. In July an intermitting, and obstinate remitting fever, prevailed [scurvy changed its form.] From the 1st to the 20th of August we had but few patients. From that time to the 1st of October, agues raged with more violence than ever; and fluxes [cholera and dysentery] succeeded in October. This month the first snow fell; and at that time children were universally afflicted with sore throats [another form.] We had afterwards settled frosty weather, and but little sickness, except a few inflammatory fevers [and still another form]; until about the beginning of the year 1739, when the scurvy began to show itself, much about the

same time as in the preceding year, and continued its usual length of time.

"Astracan is situated in 46½ deg. N. lat., on a small island washed by the Volga. Here are many salt lakes, both upon the islands and desert. The soldiers of the garrison are much more subject to the scurvy than the boors, and these last than the sailors. The soldiers live a very indolent life, having but little duty to perform. They eat hardly anything else, even in their hospitals, besides *rye bread and meal, with fish;* and have nothing but water for drink, except the decoctions prescribed for them by the surgeons. Their hospitals are very damp and in a ruinous condition. This poor garrison of five regiments, consisting of about six thousand men when complete, is yearly recruited with between six hundred and one thousand men. The boors live also but a lazy indolent life; being employed either in fishing, or in navigating great boats, from Astracan sometimes as far as Tweer. On the contrary, the sailors work hard, at all times of the year, both in the docks and at sea and live much better, having good provisions of all sorts. The winter begins commonly in October, and continues till March. It is extremely severe during the months of January and February. The scurvy generally breaks out in the latter end of February. I found it here often complicated with other diseases, viz.: the venereal disease, agues, dropsies, consumptions, etc. The violence of the distemper (except in complicated cases) seldom continues after June, or to the middle of July."

There is no complication, the scurvy changes its modes of manifestation as the seasons or exciting causes change.

"At Riga, in the years 1749 and 1750, but especially in the year 1751, the scurvy raged with the utmost violence. It broke out in the month of February that year. Here I saw the most dreadful spectacles that ever I beheld. Their gums mortified, as also their lips, which dropped off; the mortification spread to their cheeks, and lower jaw; and the jawbone in some fell down upon the breast. When the mortification first began, we tried the bark, to no purpose. Nothing but death rid the unhappy wretches of their frightful misery.

This was the climax. How plainly it appears from narration that not only a want of the elements of nutrition, but all the surroundings that tend to impair nutritive life, as indolence, etc., are causes of scurvy. See a further portion of this letter in the Appendix to our Essay on Cholera.

Postscript—*Appearances on dissection.*—"Since the second edition of the preceding treatise was published, I have had an opportunity of inspecting a number of the bodies of such as died of the scurvy in Haslar hospital. Outwardly several of them had the apearance of being much wasted and extenuated, but a few were still *plump and corpulent* [robust?], having the tela cellulosa sufficiently distended, and no apparent consumption of the body. I did not find the bowels in so putrid a state as described by Poupart and others. We frequently found the spleen to be putrid, the omentum almost wholly consumed, and its remains tainted, in such as died of the scurvy in a very low, exhausted state *after a fever.** Appearances which we judge not to be peculiar to the scurvy, but usual in all those who have been much exhausted by sickness. Some parts of the intestines, particularly the colon, in the bodies of such as died of *scorbutic fluxes*, were mortified, which is far from being an uncommon case in other fluxes."

How difficult the task of sustaining a false theory. The colon was found mortified in scorbutic fluxes; a common thing in other fluxes. Does not this show that all are of scorbutic nature if it shows anything?

"I never remarked any preternatural appearances in the brain of such as died of the scurvy, except in one person; four ounces of water lay under the dura mater, and a small quantity of it in the right ventricle of the brain. In the cavities of the breast there was commonly confined a quantity of serum or water, especially in the left side. A dropsy in that side, as likewise of the pericardium, being frequent occurrences. * * * *A dropsy in the substance of the lungs* was remarked in a few, and in most strong adhesions of the lungs to the pleura: which last are usually met with in

* Italics and brackets ours throughout.

dead bodies. * * * In the belly, the most usual, though not constant, appearances were precisely the same, red or livid spots on the omentum and mesentery, but especially on the intestines, with those on the surface of the body, [just as in cholera.] * * * Water was sometimes lodged in the cavity of the belly, even when there was no apparent swelling of it; but *not so frequently as in the breast.* * * In a word, the true scorbutic state, in an advanced stage of the disease, seems to consist in numerous effusions of blood into most parts of the body, superficial as well as internal, particularly into the gums and legs. This is frequently, though not always, accompanied with a *dropsical indisposition*, which appear chiefly in the legs and breast. * * * Sudden death is often occasioned by the rupture of a blood vessel, and a subsequent discharge of the blood into one of the large cavities of the body. I have remarked this to happen in the breast; and once observed coagulated blood swimming in the liquor of the pericardium, or membrane investing the heart, however it most frequently occurs in the belly. The blood in these cases, as well as when diffused through the bellies of the muscles in the limbs, always appears thick and coagulated. * * * In patients, whose deaths were unexpected and sudden, and where no effusion of blood could be perceived in any cavity of the body; the heart was commonly much distended with blood: the auricles and ventricles of both sides were filled, but those on the right to the greatest degree. In one man, who suddenly dropped down dead, while walking in the fields, there was a large polypus [fibrin] which filled entirely the right ventricle of the heart, and sent forth two branches, one into the pulmonary artery, another through the right auricle into the vena cava.

* * * * * * * * * * *

"*Effects of the Scurvy on other Diseases.*—I have remarked among some thousand patients in Haslar hospital, that such as were scorbutic, were not liable to be seized with fevers; and that even an infection from a fever was long resisted by a scorbutic habit of body."

Rather: when one form of scurvy is developed it does not

often change into another form: see our Essay on Nursing Sore Mouth, p. 306. of volume i.

"When some men were admitted into the hospital, laboring under the scurvy, and others from the same ship having *a fixed and continual fever, in conjunction with the scurvy,* I always found the fever to proceed from infection on board that ship."

How ascertain this? Here typhus and scurvy embrace—two diseases from two supposed distinct causes progressing pari passu! who believes it? nobody.

"If it be asked, whether an infectious fever be rendered more violent and dangerous, by its attack on a person of a scorbutic habit of body? I answer, my observations on that head, do not permit me freely to assent to the prevailing opinion, that the danger is greater from a fever, because it is complicated with the scurvy; for I have remarked, that *during the continuance of the fever, the scurvy for the most part either leaves the patient* or becomes milder; and I found the greatest danger to proceed from the *almost certain return of the scurvy*, with redoubled violence, after the recess of the fever. When the fever leaves the patient very low, especially *if he has a flux, with which the scurvy associates itself more readily than with most other disorders*, this return of the scurvy often proves fatal. [So they die of scurvy at last.] This leads me to remark the effects of other diseases on the scurvy, and how they are influenced by it. First, *a tertain or quartan ague, with perfect intermissions, sometimes accompany this disease*, without either of them [that they are too is but theory, supposition, not fact] being rendered worse, or more difficult of cure, by thus jointly distressing the patient. I have already said, that of all the disorders of the body, the scurvy seems most readily to associate itself with a flux; I now add, especially *if the flux has been of long continuance*, and the patient be not greatly emaciated; for persons very much emaciated, either with the flux or consumption, are seldom or never seized with the scurvy [one form of scurvy is sufficient.] The rheumatism is generally said to be of two kinds, viz., the acute and chronic. But of the last it would appear there are more sorts than one, by the effects of the

scurvy upon them. For it will often happen upon the attack of the scurvy, that some old rheumatic pains become much easier, nay, entirely leave the patient; whilst at other times, rheumatic complaints return at the approach of the scurvy, and with redoubled violence, so far at least as we can distinguish [between tweedle-dum and tweedle-dee] the one from the other. Scorbutic pains, however, are generally more violent in the limbs, than those of the chronic rheumatism. As to the venereal disease, I do not remember a case to have fallen under my inspection, where the scurvy was combined with a *recent* gonorrhœa. *Old* gleets and runnings seemed rather to be lessened during an attack of the scurvy [by metastasis.] But if the patient has a bubo, or an open venereal sore, *the scurvy generally seats itself* round the edges of it, which turn black, and hence it becomes very difficult of cure. One person died with an open bubo in this condition, where the blackness resembled a mortification, of which there was no other symptom. Another patient, while recovering from the scurvy, was seized with the small-pox, [no exposure to infection spoken of;] a mild distinct sort appeared, but he died soon after the turn. But in neither of the preceding cases do I think the scurvy was the immediate cause of death. There is a disorder mentioned by Van Swieten, in his Commentaries on Boerhaave's Aphorisms, said to be frequent in Holland, and to proceed from the scurvy. It is called cancrum aquaticum, the water cancer. But I am of opinion this disease is in some respects different from the true scurvy. * * * The only patient I ever saw afflicted with the water cancer, had few symptoms of the scurvy: * * * his *gums* were indeed extremely *spongy* and *putrid;* besides which, there were *ulcers on the inside of both his upper and lower lip:* he lived a very short time under his affliction, dying on the tenth day after being taken ill, with his mouth in a most dreadful putrid condition, and with symptoms of an *inflammation in his lungs.* If this person's disease was altogether scorbutic, it must be allowed to have been a very uncommon and singular case. It were indeed to be wished, that authors would be more careful not to obtrude upon the public, as the offspring of the scurvy,

such uncommon and singular cases, [but compel it to move within lines,] as are very different from the true nature of this disease, or at most, are only complicated with it, and proceed from causes entirely different from those of the scurvy."

Here is the *old theory* of the complication and intercurrence of all diseases with scurvy. It prevails to this day, so far as scurvy is seen. Dr. Barnes sees it *masked* by all other diseases, *epiphenomena*, but he says the remedies and diet must be addressed to the scurvy *basis*, or the treatment fails. Now, who does not see that all is scurvy? Let the profession split hairs to all eternity they can never show any other origin but the scorbutic origin of disease. Lind labored hard, but made out nothing but an argument against his own case—everything from typhus fever through "all the disorders of the body" associates with scurvy. Reader. study this matter without prejudice.

"*State of the Blood and Secretions in the Scurvy.*—Having before taken notice, that the blood found stagnating or extravasated in the bodies of such as had died of the scurvy, was commonly thick and congealed, a question naturally presents itself, viz. Whether that blood be really in a state which tends to corruption? This is the opinion of most authors, and what I had formerly adopted *from them,* as the foundation of my reasoning on the theory of this disease. But I am now doubtful of the blood being in so putrid a state as those authors have represented it. I have bled at different times above a hundred patients, in all the different stages of the disease, having even ventured in the last stage to take away an ounce or two of blood, in order to inspect the condition of that fluid in dying persons. And upon the whole, I have observed, that the blood of those who were seized with the scurvy, after a fit of sickness, or a fever of long continuance, was generally of a soft and loose texture. But the blood of most other scorbutic patients was in a natural state; there was generally, after it had stood some time, *a perfect separation of the water or serum, from the red concreted mass; the latter even in the last stage of the disorder was firm and compact,* and often covered with some white streaks, of

what is commonly called the gluten or size of the blood, [fibrin.]

"*Observations on the Causes Productive of the Scurvy.* Though my inspection of dead bodies, and later observations, do not evince such a constant and universal state of putrefaction in the bowels as some authors induced me formerly to believe was always attendant on the scurvy, yet *I am fully confirmed in my opinion, that whatever weakens the constitution, and especially the organs of digestion, may serve without any other cause, to introduce this disease, in a slighter or higher degree, even among such as live upon fresh greens, vegetables, or the most wholesome diet, and in the purest air.*"

This doctrine, that whatever depresses the physical or moral energies produces scurvy, has been the generally received opinion, and is correct unquestionably. We have explained why. Because nutrition is impeded or abridged by all depressing influences. No other theory harmonizes all the facts. The fact thus boldly put by Lind that it will appear, under the most favorable surroundings, proves it to be the *natural* and *primary* pathology.

"The scurvy is what many persons long confined to their bed by sickness, are apt to be afflicted with;—the first symptoms of it are commonly the same with those of a very low and feeble state of the body, viz., a weakness of the knees and back; which together with some slight pains in those parts, are most sensibly felt upon an attempt, by some motion of the body, to exert the remains of their exhausted strength. There is also, sometimes, a swelling of the legs, and an eruption of livid spots. I have known persons to die in this condition, who were supposed to have died of a low *spotted or petechial fever;* whereas *their cases were altogether scorbutic.*"

Here Lind diagnoses all the chronic ailments, and even typhus fever to be scurvy—"altogether scorbutic," nothing else. Let him alone and he will hang himself, or has already.

"*The Cure.*—To what has been already said of the virtues of oranges and lemons in this disease, I have now to add that in seemingly the most desperate cases, [typhus, cholera, flux and dysentery?] the most quick and sensible relief was ob-

tained from lemon-juice; by which I have relieved many hundred patients, laboring under almost intolerable pain and affliction from this disease, when no other remedy seemed to avail. * * * And particularly at Haslar hospital, where the scurvy raged in the year 1759, [during a world-wide blight,] many, with whom the distemper increased during a course of other medicines, and a plentiful diet on green vegetables, owed their recovery entirely to the lemon-juice. This acid, however, when given by itself, undiluted, was apt, especially if over-dosed, to have too violent an operation, by occasioning sickness and pain in the stomach, and sometimes a vomiting. To such persons, therefore, as are much weakened by this disease, those acids are to be prescribed in a small quantity at first, and always well diluted with warm water, gruels, and the like. But what I have found highly to improve the antiscorbutic virtues of the juice, was an addition of wine and sugar. Wine of itself is undoubtedly not only an excellent antiscorbutic, [the best stimulant, and it holds some of the salts of the grape still] but the best vehicle for administering the rob or juice of limes or lemons in the scurvy. This composition of the lime or lemon acid, [juice] with wine and sugar, so administered, I esteem the most efficacious remedy for this disease, and greatly to exceed the simple lemon-juice, or any other method in which it may be given."

The addition of quinine, so that the patient shall take about three grains a day, will greatly improve the prescription. Such prescription cannot probably be excelled in the present state of the art of prescribing. It fulfils the grand indication of correcting the scorbutic diathesis lying at the bottom of all disease, no matter what the epiphinomena. We have seen the worst forms apparently of typhus fever yield to this course in a few days. It will break up the course and progress of typhus in some instances, then, if proper nutrition be added, we know positively. In the diarrhœas, dysenteries, and choleras, a trace of morphine should be added, to meet the indications. This is the rational curative and preventive plan of treatment, under proper diet and exercise.

"The Peruvian bark, and all bitters, such as gentian root,

chamomile flowers, orange peel, tops of centaury, and the like, are beneficial. Those bitters are administered to the greatest advantage, when infused in wine. * * * The case of scorbutic patients, even in the commencement of the disease, seems in this respect to be similar to that of most weak persons, or of all those in whom the principles of life, or of the constitution, are enfeebled by age, sickness, or the like [exactly so].

"I have myself seen many instances of patients brought into Haslar hospital, who by being only on shore for a few days, seemed surprisingly relieved, and have frequently observed, that this disease, when proceeding solely from a long continuance at sea, is strongly and suddenly influenced by the passions of the mind, and other circumstances attending the sick. The joy of being landed after a long cruise or voyage the pleasing prospect of a speedy relief from distress, a change of air and weather, even the warmth of a comfortable dry bed, added to the efficacy of outward applications, seemed to operate powerfully and surprisingly upon the disease. In the course of my experiments on patients in the scurvy, I have relieved some * * by the most trifling prescriptions; and am persuaded, that entire credit may be given to the relation of cures similar to this published by Vander Mye, and other authors of unquestionable veracity."

There is no doubt of this: there is but one law of healing, invigorating nutrition; and the imagination, and will-power, and hope revived, may cause a deeper inspiration, and a bolder leap of the heart, and a rapid, if not seemingly miraculous cure.

"I have frequently observed, that, out of the number of one hundred scorbutic patients sent to Haslar hospital, in ten or twelve of them at least, the disease proved very tedious and obstinate, requiring not only a vegetable diet, but a continued course of medicine for several weeks; at the expiration of which, the injury done the constitution was in many far from being removed. * * * There are frequent occurrences in this disease, which I think very difficult to account for; thus it may afford matter of speculation,—That some people are afflicted with the scurvy, while their constant food

consists of vegetables, well-baked bread, flesh soups, and other articles of light and easy digestion, as was the case of many in Haslar hospital, in the year 1759; while the same diet proves a certain means of relief to others from this disease."

This is accounted for on our theory, viz.: such persons have a deep hereditary taint, and the very vegetables eaten during a pestilential period, are poor, innutritious, and we may say, scorbutic, when compared with the fruits of other years. Still, those persons who are not hereditarily tainted, will recover from an acquired taint, even on indifferent vegetables and fruits.

"Another remarkable, and not an unfrequent occurrence is, —That five or six hundred men, in a long voyage, while living the whole time on salted and hard meats, often continue in perfect health, but soon after they come into a harbor and begin to eat ripe fruits and green vegetables, many of them will be seized with an obstinate scurvy. Thus several hundred seamen have been admitted into Haslar hospital, who, while living at sea on their ship's provisions, enjoyed good health; but began to feel the first symptoms of this disease, after they had eaten greens and fresh meat for some time at Portsmouth; and notwithstanding the continuance of this wholesome diet, an enlargement from their confinement in a ship, and the most proper remedies, joined with the utmost care that could be taken of them, the scurvy continued in several of them for five or six weeks."

Greens and fruits eaten voraciously, induce diarrhœa, and thus debilitate the system and induce the development of the disease when inlaid: sailors are reckless on going ashore, drink and carouse of nights: any shock or irregularity is sufficient to develop the epiphenomena.

"Others again have been attacked with it a long time after they had left off going to sea. [How many are attacked with intermittent fever-scurvy six months after it is inlaid.] But notwithstanding all this, we may be well assured, that the scurvy will never rise to that height, as to become a general, fatal, and destructive calamity, in the nature of a plague [epidemic], where green vegetables abound, and the proper method of treatment is known and practiced."

This closes Lind's work: and it is very plain that his views underwent much change toward the close of his life; as for instance, that *cold damp air* was its chief cause, for he expressly says, *whatever weakens the constitution* induces it; thus conforming to the broad general sense of the majority of the profession. Also, that it originates in the tropics, and is of world-wide origin. Also, that fever, dysentery, dropsy, phthisis, asthma, water in the chest, and a host of so-called other diseases, are truly scorbutic. Also, that the blood is not putrid and dissolved, but sizy, or abounding in fibrin. Had he lived on to this day, or could he now revive, he would doubtless be of our way of thinking, would undoubtedly endorse our views as the only sound conclusions, to wit: that primary pathology is the scorbutic diathesis, and all forms of disease but epiphenomena.

It will be perceived that we have devoted much space to Lind's work, and we have done so because it is confessedly the fullest and best of all the old authorities; and especially because it labors to maintain that scurvy is but one uniform disease, and that all others are alike equally idiopathic. How well he has succeeded, we leave to the judgment of our readers.

With one further remark we close: it is this. Although Lind nowhere makes use of the term *scorbutic diathesis*, whether purposely avoiding it because it would be endorsing it as a basis of diseases, or not, we know not; but it is clear that the scorbutic diathesis is implied if not expressed in the following sentences: "Whatever weakens the constitution, especially the organs of digestion, may serve without any other cause, to induce this disease, in a *slighter or higher degree*," etc., (*see third edition*, p. 516.) And again, (p. 273,) speaking of the disease in Hampshire, "a slight attack was not suspected to be the scurvy." And again, (p. 518,) "the first symptoms of it are commonly the same with those of a low and feeble state of the body." Now who does not see the scorbutic diathesis as palpably recognized in these "slighter degrees," "slight attacks," and "first symptoms same as a feeble state of body," as we have recognized it, and the very same *primary* dyscrasia that we have defined it?

Lind, then, really teaches our doctrine. "Whatever weakens the constitution [no limitation], and especially the organs of digestion [or impairs nutritive life], induces"—what? nothing but a scorbutic state. There is, then, no other *primary dyscrasia* according to Lind; and with this backing of our views we pass.

SECTION II.

EPITOME OF THE OLD AUTHORS ON SCURVY, WITH DEDUCTIONS.

The reader is now better prepared from the foregoing analysis of Lind's work, to examine the long line of views that have reached us through the old authors on scurvy. All that has preceded, in these researches, awakens an interest in this section. Our view, that the scorbutic diathesis is the primary pathology of all disease, is very different from that of any of the old authors on scurvy, even those who held to the most generalizing doctrine on this subject, for even Eugalenus, the most ultra of all, grounds his diagnosis on the fact of diseases not yielding to remedies employed by the ancients. He evidently reasoned thus: agues of all types, fevers of all kinds, dysenteries, choleras, consumptions, rheumatisms, the eruptive and nervous diseases, were all well known to the ancients, and as they would not yield, in his day, to the remedies or course of treatment prescribed by the ancient authors, and would yield to antiscorbutic treatment, and as scurvy was held to be an evil of late date, unknown to the ancients, therefore the round of diseases of his day were, and of necessity must be, of scorbutic origin. Hence the two sources or origins of diseases, of which we have before spoken. These generalizationists did not sift the claims of

the ancient origin, or doubt its reality any more than their opposition brethren did; they all took it for granted this dogma was sound. No one even to this day, our humble self excepted, has been bold enough to enter a demurrer. We say there never was any other origin than the scorbutic origin of disease; that the scorbutic diathesis is and ever has been and ever will be primary pathology; that it is induced by impairing the nutritive function; that any defects in the natural vital stimuli impair the delicate nutritive process; that when the defects cluster, and are prolonged and intensified, as they were during the years of the Irish famine, the epiphenomena are developed in a chaos of forms, fashions, symptoms, blendings, intercurrence, types, changing features, etc., depending on age, sex, habits, constitution, degree and stage of the inlaid evil, season of year, weather, and other surroundings; the ordinary vital stimulants becoming irritants under such a state of things. This is the book of nature. It has been opened and expounded, and it appears to us sufficiently illustrated in the foregoing pages so that all may understand it. Disease is not an entity—a group of symptoms is not a disease. But, we have not space to ring the changes.

An epitome of the old authors on scurvy, arranged in chronological order, is appended to Lind's work, and this we shall adopt, abridging it of much irrelevant matter, as answering our purpose. Had we, access to all the old authorities, collected with so much labor by Lind, we might perhaps make out a stronger case in support of our doctrines, but upon the whole it is less objectionable, as we cannot be accused of perverting the sense. We shall make a running commentary as we go, and the italics and brackets will be ours throughout. The lacunæ marked with asterisks indicate the omission of matter of less importance, without impairing the sense, so that the reader will here find the peculiar notions and speculations of all the old writers on scurvy condensed into the briefest possible space. Our commentary calls attention to the *pestilential periods*, which, more than volumes can do, expounds the why and wherefore of the great waves of scurvoid pestilence, each producing its crop of authors. The *philosophy* of Disease is opened to view by this method.

First accounts of the Scurvy according to Lind.—"This distemper, in the Latin denominated Scorbutus, is said to derive its appellation from schorbect in the Danish language; or the old Dutch word scorbeck: both which signify a tearing or *ulcers of the mouth.* Most authors have deduced the term from the Saxon word schorbok, *a griping or tearing of the belly;* which is by no means so usual a symptom of this disease; though, from a mistake in the etymology of the name, it has been accounted so by those authors. The word seems to me most naturally to be made out from *scorb* in the Sclavonic language, which signifies a *disease;* this being the endemic evil in Russia, and those northern countries, from whence we borrowed the name.

"It is said to have been known and described by the ancient writers in physic under other denominations; and particularly by Hippocrates as the *εἰλεὸς αἱματώδης*, or third species of volvulus. * * * But the most prevailing opinion is, that, in different parts of his writings, Hippocrates has described the scurvy under the name of *Σπλῆν μέγας*, a swelling and obstruction of the spleen. * * * That this disease was not known or described by Hippocrates, farther appears from his making no mention of spots, an usual symptom in the scurvy, nor of many others which almost constantly attend it. * * * But the truth is, the warm southern climate in which he lived, was not then, nor is at this day usually productive of it: and the nature of the coasting voyages of the ancients gave him no opportunity of being acquainted with it at sea. * * * The succeeding Greek and Roman authors, are likewise upon this disease entirely silent. * * It also seems to have been a disease altogether unknown to the Arabian writers. * * * It has, lastly, and with greater show of reason, been esteemed the same disease which afflicted the Roman army under the command of Cæsar Germanicus. * * * 'The Roman army under the command of Cæsar Germanicus having encamped in Germany, beyond the Rhine, near the sea-coast, they met with a fountain of sweet water; by the drinking of which, in the space of two years, the teeth dropt out, and the joints of the knees became paralytic. The physicians called the malady stomacace and scele-

tyrbe.' * * * No mention is made of scorbutic spots, which are more frequently observed than what has been here interpreted the sceletyrbe. This is supposed to refer to the rigid tendons in the ham. But his delineation by no means seems to express this peculiar symptom in the scurvy. It is understood by Galen, the only author who uses the appellation, to mean a species of palsy very different from the scorbutic contraction.

"Strabo mentions a like malady, occasioned by the use of certain fruits, etc., to have afflicted the army under the command of Ælius Gallus in Arabia. But stomacace may refer to various other disorders of the mouth without supposing it to be the scurvy; as this calamity, when general in an army, occasioning the sceletyrbe, or depriving the soldiers of the use of their limbs, must needs have been attended with other concomitant symptoms, equally constant and remarkable in the disease. I do not mean, that the scurvy never afflicted armies of old; but only that the accounts we have of it are dubious and imperfect. The first description of a true scurvy that I have met with, is what occurred in the Christian army in Egypt, about the year 1260, under Louis IX. But there, mention is made, not only of the legs being affected, but also of the spots. The fungous and putrid gums are particularly described, etc. (*Vid. Histoire de Louis IX. par le Sieur Joinville.*) * * * There seems to have been two reasons principally why it is so imperfectly, if at all, described by the ancients. viz.: their little knowledge of the northern countries, where it is peculiarly endemic, and their short coasting voyages; so we find, that as soon as arts and sciences began to be cultivated among those northern nations (about the beginning of the sixteenth century, a period remarkable for the advancement of learning over all Europe) this disease is mentioned by the historians and other authors. We could not have expected it sooner from their physicians, if we reflect upon their extreme ignorance, and the little esteem in which this science was held. But when, after the taking of Constantinople, the Greek writings were dispersed over the western parts of the world, and in the beginning of the next century were made more general and public by the

late invention of printing, the art of physic began to flourish in the northern parts of Europe; and we soon after find this disease accurately described there by physicians.

"In like manner, no sooner were long voyages performed to distant parts of the world, by the great improvement of navigation, and by the discovery of the Indies, which happened much about the same period of time, than the seamen were afflicted with it; as appears by the voyage of Vasco de Gama, who first found a passage by the Cape of Good Hope to the East Indies, in the year 1497; above a hundred of his men, out of the number of a hundred and sixty, dying of this distemper. In the relation of which voyage, the first account of this disease at sea is to be met with. At that time, and for a considerable time afterwards, it was a disease little known.

"The name of the disease is said to be in the history of Saxony, written by Albert Krantz; and if so, I believe he will be found the first author now extant who calls it the scurvy, A.D. 1501. It is next taken notice of by Euritius Cordus in his Botanologicon, published A.D. 1534. It is observed that the herb chelidonium minus, or lesser celandine, is called by the Saxons schorbock rout, being an excellent remedy for that disease. Being asked, what disease this is? it is replied, It would seem to be the stomacace of Pliny; as it occasions the teeth to drop out, and all the mouth is affected by it. In the year 1539, it is mentioned in the same manner by Jo. Agricola in his Medicina herbaria. Olaus Magnus, in his history of the northern nations, published in 1555, observing what diseases are peculiar to them, gives us a long description of the scurvy. Jodochus Lomius does the same in the year 1560.

ECHTHIUS ON SCURVY, 1541.—"He assigns as causes of this disease, gross and unwholesome food, such as salted, dried, or putrid flesh and fish, rancid pork, spoiled bread, bad water, &c. He distinguishes the symptoms into two classes. The first contains such as appear at the beginning, and are *common to it with other diseases;* [the symptoms of all diseases alike in the beginning, in the scorbutic diathesis] the second,

the succeeding and more certain signs of the malady, [epiphinomena.] Under the first, he comprehends a *heaviness of the body,* with an unusual *weariness,* generally most sensibly felt after exercise; a *tightness of the breast,* and a *weakness of the legs;* an itching, redness, and pain of the gums; a *change of color* in the face to a darkish hue: and observes, that where all these symptoms concur, we may foretel an approaching scurvy. But the more certain signs he enumerates under the second class, viz., a fetid breath, a spongy swelling of the gums, which are apt to bleed, with a loosening of the teeth; an eruption of leaden colored, purple, or livid spots, on the legs; or of somewhat broader ones variegated or of a dark color sometimes on the face, at other times on the legs. As the disease advances, the patients lose the use of their legs, and are subject to a *difficulty of breathing,* particularly when moved, or when they sit in an erect posture; at which times they are *apt to faint:* but upon being laid down again, they recover, and breathe freely; nay, when lying down they think themselves in perfect health. But as they cannot always thus continue without some motion, they are subject to these *perpetual faintings.* The appetite is seldom bad; on the contrary, they generally have a good one. There is sometimes observed an aggravation of the symptoms; with some on the fourth or fifth day, in others on the third. Some few have it every day, but without any fever: *others become feverish. Fevers may terminate critically, as it were, in the scurvy,* [typhus;] and with such scurvies whole families and monasteries are infected; which generally end either in a fatal *dysentery,* or, at other times, in a sudden and irrecoverable fainting. During the course of this disease, some are apt to be very *costive;* while others have a continual *purging.* Sometimes their spotted legs swell so monstrously, as to resemble the leprosy of the Arabians; while others have them so extenuated, that the bones seem only covered with skin. The spots of some separate into black and duskish scales, like the leprosy of the Greeks; while in others they remain soft, smooth, and shining; and the impression of the finger continues for some time upon the part, [œdematous.] After death the spots sometimes disappear; at other times, they break out

afresh. Lastly, there have been observed varicose swellings of the veins, particularly in those under the tongue, and of the lower lip. He afterwards delivers the indications of cure, without giving us any remedies. And it may not be improper to remark, that this is the first description now extant of the scurvy by a physician."

Langinus on Scurvy, 1560—Two Epistles.—These two epistles were reprinted by Ronsseus, in order to prove the scurvy to have been a disease known to the ancients.

Ronsseus on Scurvy, 1564.—"He ascribes the frequency of the scurvy in Holland, to the diet and air of that country; to their eating great quantities of water-fowl; but principally to their living on flesh, first salted, then smoked and dried The weather, he says, had a very great influence upon this distemper. For though it occurred in these provinces at all seasons; yet, by long observation and experience, he had found, that a moist air, and southerly wind, contributed greatly to increase it: and instances the year 1556, when, during that whole year, they had almost continual rains, with southerly and westerly winds; which were followed by a great frequency of this disease; and to such a height, that many were brought in danger of their lives by it. In 1562, after a very rainy season, there likewise ensued frequent and very troublesome scurvies. So that although this was at all times common in Holland, from the peculiar air of the country, and the bad waters; yet it often became more general during a moist season, [note the constitution of the seasons.] It usually prevailed most in spring and autumn; was milder in the spring, and shorter: but *in the autumn, it was of longer continuance, and more obstinate*, so as sometimes to endanger the life of the patient. *No age was exempted from its attack;* which, though severest with old people, yet was more incident to those of a middle age. * * He begins the cure by bleeding. He afterwards prescribes a decoction of a number of antiscorbutic herbs, with the addition of senna, and some other purgative ingredients: but * * he thinks, that the use of scurvy-grass, wormwood, and germander, is alone suf-

ficient; the vulgar curing themselves by scurvy-grass, brook-lime, and water-cresses. At the end of the cure, he gives gentle physic; forbidding all rough and acrid medicines, especially violent purgatives; till towards the decline of the malady, *when the patient is able to bear them.* For twelve years past, he had used with great success, both for prevention and cure, a tincture, in spirit of wine, of fumitory, scurvy-grass, wormwood, and small germander, or herbs of the like virtue. * * He observes that much depends on the diet. * * * To prevent the disease he recommends gentle physic in the autumn; but especially the use of a slight infusion of wormwood in ale or wine: by which (with the help of a diet of easy digestion, the benefit of good air, and dry lodgings) he has known the scurvy often not only prevented, but cured. In his first epistle, he accounts for the frequency of this distemper in some places more than in others; from their different soils, climates, and weather, and especially from the quality of the waters they used; observing that, *universally, in marshy countries, people were most afflicted with the scurvy:* though their diet and other circumstances were alike with others. In his second epistle, he maintains, that *this distemper was known to the ancients*, against the opinion of Wierus; and remarks, that *seamen in long voyages cure themselves of it by the use of oranges.* In his third epistle, he recommends the steel and mineral waters."

Wierus on Scurvy, 1567.—"He transcribes all the symptoms out of Echthius at great length, with the following additions. The weakness in the legs felt at the approach of the disease, is attended with stiffness and pain. The flesh of the gums is often destroyed to the roots of the teeth. Small spots, resembling blood sprinkled upon the part, appear on the legs, thighs, and on the whole body; but the very large, livid, and purple spots, chiefly on the legs. Sometimes this livid color will show itself in the back part of the mouth of those who are near death. In the progress of the disease, the tendons of the legs become stiff and contracted. Some are seized with a *slow irregular fever*, [typhus or typhoid.]

After violent malignant fevers, and double tertian agues imperfectly cured, he has known the scurvy to follow; upon which a malignant quartan ensued. *This still left the scurvy* behind it; which was at last cured by proper medicines [fever before, during, and after scurvy; showing all to be scurvy but in name]. When the legs are greatly swelled, they are sometimes altogether of a livid color. The pulse, as in a quartan ague, varies: so that at different times, and according to the state of the disease, it is small, hard, quick, or weak. The urine is reddish, turbid, thick, and muddy, like new red wine, resembling that which is usual in the fit of a quartan ague when sweating; and of a bad smell. He adds afterwards, that if ulcers break out on the legs they are with great difficulty healed up; being extremely fetid, and of so putrid and gangrenous a nature, that the application of a hot iron to them occasions little pain. He assigns as causes of this distemper, unwholesome air, such bad and corrupt food as was used in the northern countries, and by their seamen, viz.: stinking pork, smoked rancid bacon, mouldy bread, thick muddy ale, bad water, melancholy and grief of mind, preceding fevers, the stoppage of usual evacuations, etc. Though he sometimes bleeds in the beginning, yet he forbids it when the disease is advanced. In this case, after purging with a little senna or the like (observing that it does not bear violent purgatives) the patient is to be sweated twice a day, viz.: in the morning, and at four after noon, with a draught of four ounces of the expressed juices of the antiscorbutic herbs; viz.: scurvy-grass, water-cresses, winter-cresses, or rocket, of each equal parts, with half the quantity of brook-lime; adding a little cinnamon and sugar. * * * He would have the herbs always fresh and green when used; and they may sometimes be boiled in goats' or cows' milk, or rather in whey: but their juice mixed with whey is preferable to their decoction. * * At the same time, a diet of easy digestion, and of similar intention, must be used, with good sound ale or wine with wormwood infused in it, and milk or whey. Care must be taken to procure dry, cheerful lodgings, and to banish grief, cares, etc."

According to Webster, (vol. i. pp. 154 to 158,) there was a

long pestilential period of many years, at the time the preceding productions appeared. See also census of Ireland for 1851, part v. pp. 101–2. Epidemics pervaded all Europe, from influenza to the plague, petechial fever, and sweating sickness.

Dodonæus on Scurvy, 1581.—"He ascribes the scurvy chiefly to bad diet. He relates, that it was occasioned in Brabant, A.D. 1556, by the use of some corrupted rye brought from Prussia, during a scarcity of corn. At this time many had not the spots; but their gums were chiefly affected. He gives an instance, however, of its being contracted in a prison, where confinement alone was the cause; the place being well aired, and the diet such as he thought could give no suspicion of its proceeding from thence. He never bled any patient in this disease, but the person in the prison, who had signs of a plethora. He generally performed a cure by the use of a few herbs, viz.: water and garden cresses, scurvy-grass, and brooklime; which last he esteems of inferior virtues to the others. These he thinks sufficient to remove the scurvy, if, at the same time, proper diet is used, especially well-baked wheat bread. He sometimes gives a gentle purgative at first, and repeats it occasionally: but if the disease is far advanced, purges are not without great caution to be administered. When only the gums were affected, he has cured these often by topical applications. The large livid scorbutic spots like bruises [purpura], are oftener seen on the lower extremities than on the arms. If the disease is very virulent, and not removed, the hypochondria will also become livid; and the patient in this case be seized with *violent gripes*, and die [cholera]."

Brucæus on Scurvy.—"The scurvy is endemic in particular countries, from their situation, air, water, and food. *In those countries, scorbutic mothers bear scorbutic children, often miscarry, at other times bring forth dead fœtuses.* He mentions no other symptom, but what is taken notice of by Wierus; except a pain sometimes in the right, at other times in the left side, attended with a sense of weight. Upon the malady's

increasing, the belly swells, and grows also painful; with an entire loss of appetite. In his theory of the disease, he supposes, that either the liver, or spleen, sometimes both, but oftener the spleen, was obstructed. * * * When the scurvy is very inveterate, it degenerates into the hypochondriac disease; a distemper frequent among the inhabitants on the shores of the Baltic. It is sometimes *complicated with other diseases*, viz.; the *dropsy*, *consumption*, and a *bilious purging* [cholera morbus]; at other times there is a *slow continual fever* [typhus], and sometimes a *tertian ague* [malarious fever]. His cure consists in diet and medicines. For the first he directs well-baked wheat bread; broth of flesh or fowls, with radish, hyssop, thyme, savory, or the like herbs boiled in it. He allows all sorts of flesh or fowl (except water-fowls) that are of easy digestion, and afford good nourishment. Whatever is dried, salted, smoked, long kept, and rancid, or of difficult digestion, is to be avoided. Milk is proper for those who are far gone in *scorbutic consumptions*, [whoever hears of scorbutic consumptions in these days?] At table the antiscorbutic herbs are to be used by way of salad, and for drink good Rhenish wine, or sound beer with wormwood infused in it. After a moderate bleeding (if the patient be full of blood) and a gentle purge, scurvy-grass, brook-lime, water-cresses, and the roots of horse-radish are to be boiled in milk, and adminstered to the patient; or their juices may be given mixed with whey, adding wormwood or mint, if the stomach be weak, sorrel or fumitory if the patient be of a hot constitution, and a fever apprehended, or the roots of elecampane, and the herb hyssop when the breath is affected. If the patient be of a cold habit, has swelled legs, and the spots are black, the juices are best given in wine, with cinnamon or ginger; or he may take an infusion of horse-radish in Rhenish. The author likewise recommends the sweating course from Wierus."

Brunerus on Scurvy.—"He has copied Wierus in most things; but is more explicit and full in describing the air productive of the disease. Thus, if the atmosphere of any place is impure, and polluted with exhalations that are gross,

moist, putrid, or liable to putrefaction, it causes this distemper; as in marshy, damp, and maritime countries; or places where stagnating waters are left after inundations. To which also *rainy seasons contribute a great deal*, especially where the sun has not influence sufficient to raise and dissipate the vapors. To the diet observed by other writers to occasion the scurvy, he adds black coarse bread; and observes, that the pernicious effects of such diet and air are considerably augmented, by immoderate watchings, *depressing passions* of the mind, and stoppage of the natural and usual evacuations. * * * He has often remarked, that violent pains in the legs preceded the scurvy, and that the spots and putrefaction of the gums followed soon after. * * * He concludes with the case of a scorbutic patient; whom he first purged, then ordered the juice of water-cresses in goat-whey; of which six ounces were taken twice a-day; and, by sweating him, a number of scorbutic spots appeared, by which a violent pain in the thigh was allayed."

ALBERTUS ON SCURVY, 1593.—"He is of opinion, that the disease may be *hereditary*, or got from an infected nurse, and that it is *contagious;* but adds nothing to the description of symptoms of it as delivered by Wierus, unless it be a stiffness or rigor of the lower jaw, seemingly from a contraction of the temporal muscle; in the same manner as the tendons in the ham become stiff and contracted in the progress of the disease, as had been observed by all authors. He says *it is most usual in children*, and is either a hereditary scurvy, or that which is got from the nurse.

"He treats of the diet proper in this disease at great length: recommends the *juices of acid, and austere fruits*, such as oranges, with which roast meats when on the spit are to be sprinkled. These are likewise to be put in soups, and vinegar and wine in the gruels and barley-water. Exercise is necessary.

"In full habits he begins the cure with bleeding, but observes that when the disease is advanced, especially if the spots have appeared, it is extremely improper. In this case, if there is an obstruction of the menses, or hemorrhoids, those evacuations

are by all means to be promoted; which will be of great service, though they may not prove a cure; having seen women regular after child-bed, yet overrun with the scurvy. He prescribes very gentle physic, observing the *danger of giving violent purgatives;* then gives a long catalogue of aperient and deobstruent medicines. He remarked, scurvies were frequent in that and the preceding year [1592 and 1593], from the unconstant weather and *very rainy seasons they had after warm summers.*"

This was the date of the beginning of the pestilential period, that closed the sixteenth century. Webster says of the constitution of the seasons of 1592, "in England the drought in this and the former summer was extreme. The Thames was fordable at London: the plague appeared in Shropshire in the west; and in London carried off 18,000 citizens.

Forestus on Scurvy, 1595.—"This is a long letter which the author wrote first to his brother in the year 1558, and afterwards sent to his two nephews students in physic, A. D. 1590. He seems to have been acquainted with no other authors upon this subject than Ronsseus and Echthius. The last he copies in describing the symptoms; all which he confirms and illustrates by various cases of patients. He makes it a disease unknown to the ancients, though, according to his theory, a disorder of the spleen. It was indeed so little known in his time, that many died of it, to the great surprise of the physicians, who were entirely unacquainted with the very name of the disease, its nature, or proper method of cure. * * * He illustrates the several intentions of cure at great length in the case of a sailor at Alcmaer, who *fell into the scurvy after an autumnal quartan ague, which had continued seven months* [mark this reader.] * * * *He has known many fall into the scurvy after such intermitting fevers.* This patient had labored under a great difficulty of breathing, and had lost the use of his limbs; his left knee, and the whole leg, being swelled, hard, spotted, and so stiff, that he could not walk, or even move it: his gums were swelled and bled frequently. The physicians and surgeons said, he was poxed;

but when the author saw him, he found it to be the scurvy. It was indeed a complicated case; the fever having left behind it a *hectic disposition*, with obstructed bowels.

"Forestus, who has had great practice in this disease, says, the distinguishing marks of it are, an *oppression on the breast;* weakness and pain of the legs; redness, pain, and itching in the gums; with an alteration of color in the face. However, *in the beginning it is not so easily known;* being sometimes slow in its progress, and having the above mentioned *symptoms*, together with a lassitude after exercise, *common to it with other diseases.* * * * He recites the symptoms from Echthius's epitome; adding, almost after each, instances of patients in whom they occurred. In particular, after the remarkable *proneness to faint* in the height of the disease, he adds that he has known several *drop down dead suddenly.* * * * He recommends *butter-milk* when the patient is inclinable to be *hectic:* but where there was no fever, he cured many by milk, in which scurvy-grass and brook-lime were boiled."

Reusnerus on Scurvy, 1600.—"This voluminous author, remarkable only for his theory, describes the scurvy, in its different stages, altogether in the same manner as the authors before him; with the addition of the following symptoms. A *bleeding at the nose*, which he says is usual even *in the beginning* of the disease; as likewise a continual spitting. Some have a pain at the mouth of the stomach, and there is a want of appetite; or at least if they long for food, it is rather hurtful to them. He observes, that *scorbutical women are subject to the fluor albus, and menses discolores.* The urine is for the most part thin, pale, and watery, without any sediment, and of a fetid smell. The pulse is low, weak, slow, and irregular. He is extremely prolix on the cure. But it were to be wished, that the many *chemical* and galenical remedies recommended, had been proved serviceable by experience, rather than by being agreeable to his theory."

Eugalenus on Scurvy, 1604.—"This book must have been published by the author in a very loose immethodical dress;

as it has undergone several corrections by different editors; and the order of the whole is still very inaccurate. Jos. Stubendorphius published it in the year 1615, with great alterations: and Brendel, Professor of Medicine at Jena, in 1623, again corrected it; and with great labor has classed the different symptoms, or rather *species of this disease*, into different sections, making in all *forty-nine in number.* They will admit of several subdivisions; and comprehend a catalogue of *almost all distempers incident to the human body.* There are here also fifty prognostics, with thirty generally diagnostics of the scurvy; besides the particular diagnostics of each symptom, or rather disease, by which it is known to be scorbutic. But as I have elsewhere animadverted at great length upon this book, it may be sufficient here only to repeat, that *the merit of the author has always been supposed to consist in his great sagacity in detecting this deceitful disease lurking under so many different forms.* * * * The symptoms are as follow: I. Putrid gums. II. Blackish, purple, and livid spots. III. Malignant ulcers. Acquainting us that these are obvious signs, known even to the vulgar, he observes, that *the disease often proves fatal before they appear.* * * * He says, the urine of those who labor under this disease varies extremely. * * * As the distemper increases, it becomes sometimes thin, and of an intense red color, inclining to a livid hue. If the patient passes this urine when seemingly in perfect health, having little or no thrist, it is a certain sign of the scurvy. Frequently the urine appears thick, red, and manifestly livid; it either remains thus thick, or deposits a thick, red, heavy sediment like bran or sand, having besides for the most part a thick, turbid matter suspended a-top: such likewise is a demonstrative sign of the disease, provided the patient languishes, without any thirst or fever. * * * Where there is no fever, nor putrefaction of the humors, thick, white, and turbid *urine, having a white, roundish, heavy sediment, like sand or brick-dust, is the most undoubted sign of the scurvy.* The pulse peculiar to this disease, is quick and small, but particularly unequal. IV. Difficulty of breathing; known to be scorbutic, 1st, By the part affected; which is under the diaphragm, at the orifice of the stomach.

2dly, By the complaint: it is a great and uneasy straitness and oppression not easily expressed. 3dly, By its remission and intermission; though sometimes it is almost continual. 4thly, By its having none of the symptoms which usually follow disorders of the breast, viz., cough, pain, orthopnœa, etc. V. *Vomitings, retchings, and even the cholera morbus.* A vomiting is known to be scorbutic, 1st, By not yielding to the common medicines, and those prescribed by the ancients in this disorder; on the contrary, the patient becomes worse after using them. 2dly, Its sudden unaccountable remission, and equally unexpected return. 3dly, Its seizing without any previous pain, disorder of the stomach, or a distemper described by the ancients. The retchings are very violent, without bringing up much from the stomach. But the most certain proofs are had from the urine and pulse. VI. A looseness, or costiveness of the belly. VII. A bastard dysentery; known to be scorbutic by want of gripes, the blood not being mixed with the fæces, but chiefly by the pulse and urine."

It is plain that two origins of the cholera morbus are here recognized, viz., are *ancient* and a *scorbutic* origin, the latter unknown to the ancients.

"VIII. *Irregular fevers.* IX. *Intermitting fevers.* X. *Continual fevers.* Under these he comprehends *most species of fevers*, viz., *slow, putrid, remitting, and intermitting, of all kinds.* They are all ascertained to be scorbutic, by the oppression in the breast, not agreeing in type with those of the ancients, etc., but more infallibly by the pulse and urine. The first, though strong and hard during the fever, upon its remission returns again to its peculiar, small, and unequal state."

The difficulty with Eugalenus was, in holding to two origins of the fevers. He was right in his observation that fevers were of scorbutic origin; but wrong in holding that scurvy was unknown to the ancients, or that there was any other origin.

"XI. Fainting-fits. XII. Pains of the legs. XIII. A pain in the hands, and ends of the fingers. This is known to proceed from the scurvy by the pulse. XIV. A pain in

the neck. XV. Pains in almost every part of the body, viz., the teeth, jaws, back, etc., burning pains in the kidneys, head, arms, etc. XVI. The bastard pleurisy; discovered in a girl to be scorbutic, by the smallness and inequality of the pulse; the intermission of the pain; and being free from cough but at times; by the urine, and her having no thirst, and breathing without pain. * * * XVII. Violent colic pains; easily known when scorbutic, by their intermission, the urine, and pulse. He gives two instances of ruptures occasioned by the acuteness of these pains. XVIII. Hard *tumors* similar to those in the pox, viz., *in the groin*, and other glandular parts of the body; or in any other part, as *in the interstices of the muscles*, etc. They often arise from varices or a dilatation of the veins. These give no pain while the patient is at rest, and the part kept easy; but upon walking, or hanging the legs, they become so very painful as to occasion fainting. Sometimes the whole body is covered with such tubercles. XIX. Weakness of the legs upon walking. XX. Retraction of the heel backwards towards the ham; known when occasioned by the scurvy, from the pulse alone. XXI. Troublesome prickings in the soles of the feet, next day followed with a palsy of the lower extremities. XXII. A palsy of the legs; distinguished from palsies described in ancient authors, by differences very equivocal, and too long here to mention. XXIII. A hemiplegia. XXIV. Weakness of the whole nervous system. XXV. A colic ending in a palsy. XXVI. A convulsion or contraction of the members, gradually coming on. XXVII. The epilepsy is known when scorbutic, by the pulse and urine; as likewise, 1st, By its attack accompanied with a fever. 2dly, Its sudden attack, and equally sudden remission. 3dly, Its proceeding from no cause assigned by the ancients. XXVIII. An apoplexy. XXIX. Convulsion of a particular part. XXX. The gout; known to proceed from the scurvy, by not being fixed, but shifting from one joint to another; and its being quickly cured by antiscorbutic medicines. XXXI. The dropsy; requiring quite a different method of cure from that described by the ancients; and is easily distinguished from it, by the difficulty of breathing becoming much worse after purgatives.

The difficulty of breathing is at all times greater, even in the beginning; with extreme anxiety under the diaphragm. XXXII. The encysted dropsy. Before this is fixed in any particular place, it causes a momentaneous swelling as it were, in different parts of the body; which most commonly happens upon change from pure to a thicker air, or to those who use gross food; otherwise the legs swell first, then the whole body is covered with a hard and unequal swelling, and with various indolent tubercles, etc. XXXIII. The scorbutic atrophy; which can be cured only by antiscorbutics. It is known by the patient's languishing, without having any disease described by the ancients; by the pulse, urine, and frequent anxieties; but especially by spots on the body. XXXIV. Ulcers and gangrene of the toes. XXXV. Ulcers on different parts of the body, cancers, etc. XXXVI. Pestilential fevers, and tumours; distinguished from the true plague, generally by the mildness of the symptoms, but more easily by the pulse, and sometimes by the urine. XXXVII. A mortification, either with or without ulceration. XXXVIII. The scorbutic erysipelas; known by the pulse, urine, and shifting its place. XXXIX. Madness, and the memory impaired. These two more rarely occur, being not so demonstrative symptoms of the scurvy as many of the preceding. XL. Carus and a profound sleeping. XLI. A salivation. XLII. A languor, without any evident cause. XLIII. A disorder like to a languor. XLIV. Copious sweats, the forerunner of an atrophy. XLV. A cutting or tearing pain in the accession of fevers. XLVI. Tossing or concussion of the limbs, being a mixture of a paralytic and convulsive disorder. XLVII. Tremor of the limbs. It is known to be scorbutic by the pulse alone. XLVIII. Ulcers of the penis. XLIX. Dry ulcers. The book is concluded with seventy-two observations, containing a variety of cases in these diseases."

The reader will see how very unphilosophic this old Dutch author was in holding to two origins of disease, and yet he was nearer the truth in ascribing all forms of disease to a scorbutic source, than all his opponents, Lind included. Lind makes him appear as ridiculous as he can, of course, but he derides in vain; *he* has not shown any other origin of dis-

ease. The animadversions of Lind on this author are very severe; but if the reader will take note of the fact that Eugalenus wrote just after that most mortally pestilential period that occurred at the close of the sixteenth century, he will better understand the merits of the case.

"Eleven years after Albertus, we are made acquainted, by Eugalenus, with the surprising rapidity with which this contagious distemper [scurvy], progressed over almost the whole world. 'And what is still more remarkable, the face of the disease was in a few years so much changed, that the putrid gums and swelled legs were no longer characteristic signs of it, as it often killed the patient before these symptoms appeared.' And it is highly probable, from the histories of above two hundred cases of patients given in his book, wherein mention is made of the gums being affected in one person only, that such symptoms did now but rarely, if at all occur. This disease had also become more violent and malignant, as he gives us to understand in different parts of his performance."

The period in which Eugalenus wrote was one of the most awfully pestilential in the world's history. Famine extended the world over; this explains the matter. All forms of disease, even to the malignant plague, were seen by Eugalenus to be but forms of scurvy, palpably so during those blighting years.

"This leads me to the most distinguishing characteristic of his book, and which is to be met with almost in every page, viz.: its being a disease not properly described by the ancients: to which he often adds, its not submitting to the cure prescribed for it by those old authors. Thus he imagined, that the scurvy might assume the form of almost all diseases incident to the human body: or in other words, that the numerous and various distempers described in his book, *from the plague to a simple intermittent fever, might be produced by this one scorbutic cause.* Now, whether the disease was altogether and purely scorbutic, or the scurvy was joined or complicated with another malady, no cure could possibly be made in either case, without the common and specific antiscorbutic herbs. The vanity and presumption of this

author are indeed intolerable, when he assures us that he could cure beginning consumptions in fourteen days; palsies in five days, often in four, but in fourteen at most; violent tooth-aches in a few hours; severe quartan agues in ten days, otherwisc not curable in a year. His extreme ignorance in physic, appears, among many other instances, from his taking a proneness to faint in child-bed women for a demonstrative sign of the scurvy [we think the boot is on thc other lcg]. In a man of seventy years, he judged a mortification of the foot to be scorbutic, by the black and purple spots which appeared upon the mortified part [good judgment we think]; and the small, weak, and unequal pulse, naturally to be expected in such a situation. Eugalenus had not the talents sufficient to form any sort of thcory for illustrating the nature of the many diseases referred by him to the scorbutic taint. * * * So it was left to Dr. Willis, with the assistance of Dr. Lower, to clcar up a subject that lay under very great obscurity, by reducing the whole into an ingenious system, which continues established and adopted even at this day."

The reader must judge betwcen Lind and Eugalenus. For our part, until the first link in the chain of some other disease than scurvy is discovered, we shall hold to the scorbutic origin of *all* disease. Under the extraordinary years, blights, and famines of Eugalenus' time, no wonder patients died before the gums and legs became affected. These phenomena attend the slow scurvy. No wonder Pott's gangrene seized old mens' toes of seventy. No wonder child-bed women fainted —we have repeatedly seen them die from no other cause.

Upon the whole, it may be said of Eugalenus, that he was blind of *one* eye, the eye with which he looked back to the supposed ancient origin of disease; and of Lind, that he was blind of both in this matter.

Platerus on Scurvy.—" He seems not to have seen Eugalenus's book, or at least has copied nothing from it: for he still gives the same description of the scurvy, as Wierus, and all other authors preceding Eugalenus, have done. He, however, takes notice of one symptom not mentioned by thcm, viz.: tumors, sometimcs indolent, at other times more painful,

resembling a scrofulous gland. These are seated either on the glandular parts of the body, or in the interstices of the muscles. The sweat of scorbutic persons is fetid; their urine red and turbid; their pulse feeble; as had been observed by all others before Eugalenus. He seems inclined to believe, that, like the lues venerea, the scurvy might have been brought from abroad, especially by sailors. It sometimes produces *convulsions* and *palsies;* and may end in an *atrophy, consumptions*, *dropsy*, or dysentery. He recommends for prevention, as also cure, a confection of mustard seed and honey; as likewise the juice of oranges. * * * The patient may be sweated with decoct. lignorum."

This author's observations, also, must have been made during the pestilential period just then closed.

Vizcaino's Voyage to California, 1608. "It will not be foreign to the purpose, to mention here the sickness which raged among the squadron, being the same, which in these parts generally seizes on those who are coming from China to New Spain, and which proves so fatal as to sweep off half the ship's company."

There is nothing new in this account by this navigator, and we therefore merely notice it, in the chronological order in which it is given by Lind at some length. The voyage was made in a pestilential period, 1602, (*See Webster.*)

Hortius on Scurvy, 1609.—"The disposing causes are, thick foul air, and gross viscid food; both which, as productive of the scurvy, he pretty well describes. He observes, that though in the Lower Saxony, and Old Marche of Brandenburgh, it was a disease generally very well-known; yet in some places it was a more uncommon and slighter disease than in others; being most frequent and dangerous where the inhabitants used thick unwholesome new ale, and where the soil was marshy and damp. * * * He recommends spirit of vitriol given along with other antiscorbutic remedies; and has perhaps nothing else new on the disease, but theory."

Martinus on Scurvy.—"He copies entirely from Eugalenus

his description of the scurvy, adding some new symptoms first mentioned by himself; such as a swelling of the eyes, frequent darkness over them; virulent ulcers in the throat; such variety of pains in all parts of the body as cannot be expressed, viz.: tensive, pulling, pricking, biting, corroding, gnawing, etc., on the muscles, membranes, and nerves [neuralgia]. These are not only severest in the night (as is most commonly the case) but afflict likewise in the evening, morning, and through the day. The pains may all with great certainty be known to proceed from the scurvy, by the smallness and inequality of the pulse. Even pains peculiar to each part, are rendered wonderfully anomalous by the scurvy. This disease is nearly allied to the plague [is it?]; as it occasions *carbuncles*, *buboes*, *cancers*, etc. *Most* [*all*] *tertian vernal agues are scorbutic* * * * Eugalenus is everywhere an oracle; his whole book being transcribed, and digested into a much more methodical order, with the addition of some things from Wierus, Albertus, etc."

Sennertus on Scurvy, 1604.—"What he calls his own new and uncommon observations, are as follow. One is the case of a student, who, upon the disappearance of an itch, was seized with a gutta serena, difficulty of breathing, and tightness of the breast. He recovered his sight by the use of some purgative medicines, and diuretics of the antiscorbutic kind. The other, a boy of twelve years of age, who had also the itch; and it being repelled by an improper unction, he lost his sight, and afterwards died epileptic. The author having often remarked, after an itch in such a manner injudiciously treated, pains and prickings in the breast to ensue, with *pleurisies*; and likewise *tertian and quartan fevers*, which were removed upon the appearance of the eruption, but returned again upon its disappearing; from thence he concludes the scorbutic humor combined with the itch, to have produced those surprising symptoms. [*The metastasis of disease here spoken of proves the unity doctrine.*]

"He then proceeds to still more uncommon and remarkable symptoms of the scurvy; * * * *jaundice ending in a dropsy;* an *asthma;* a *tinea*, covering not only

the whole scalp, but the forehead; a *herpes or ringworm* of the left arm; a *gangrene* in the fore-finger; a *hæmorrhage* from the lips, no conspicuous orifice of a vein being discovered; a *palpitation of the heart;* burning and intolerable pain in the soles of the feet, with livid spots on the legs; and a running of putrid and purulent matter from the uterus. * * * In some, though less frequently, upon each motion of their joints, a noise was plainly heard, as from broken bones, or like the crackling of nuts. * * * A widow laboring under a *continual fever, had her whole body covered with large black spots; her face resembling in color the skin of smoked bacon* when boiled. From all which he concludes, *such is the strange variety of diseases and symptoms occasioned by the scurvy,* that not only the vulgar, but even a physician unacquainted with the distemper, would be greatly amazed, making up sixty-two symptoms, by adding several to what are mentioned by Eugalenus, viz., blindness; a stench of the body; a stoppage of the menses in women; in place of which they have a white acrid saltish running, apt to infect men: and men from this disease are rendered unfit for generation, by having a watery vitiated semen. He is very prolix on the cure; and abounds with almost all the prescriptions given by preceding authors. * * * He recommends steel where there is not the convenience of *mineral waters;* but forbids th use of vinegar in this disease."

Vander Mye on Scurvy, Siege of Breda, 1627.—"How far the *passions and dispositions of the mind* contribute to the production and cure of diseases, and how much their symptoms and appearances are diversified by *different seasons and by different food,* no where more clearly appeared than in the siege of Breda. We here saw the progress of the plague, scurvy, and such like diseases, increased upon the report spread of bad news, but in a manner altogether checked by the arrival of joyful tidings. We here beheld some apparently relieved, many perfectly *cured, by their faith* in imaginary remedies. Grief and fear greatly injure the human body, and in a particular manner give strength and vigour to the *plague and scurvy.*

"But we proceed to relate the order in which these dis-

eases occurred, and the influence of the various causes which gave rise and diversity to their appearances. *The preceding summer being very warm and dry*, produced inflammatory fevers, pains of the side and breast, and sore-throats of a mild nature. Soon after this the plague was brought hither by infection from Holland [so supposed]. *In the autumn the weather was cloudy and rainy*, with southerly winds; the *winter also proved wet* and open, the season being windy though mild * * * In the end of winter a frost came on, and put an entire stop to the plague. An universal joy now prevailed, occasioned by the daily arrival of messengers encouraging the besieged with the hopes of a speedy relief, and by their own army being already in sight. But these hopes were soon baffled, the attempts of the Dutch army proving fruitless. *Scarcity of provisions* increasing in the town, and as the frost went off the moist and unwholesome vapours from the lakes, added to a *damp cloudy rainy equinox*, produced a new calamity. *The appearance of livid spots* on the body, occasioned at first a general consternation. The surgeons who were ignorant, declared the plague to have broken out again; but upon a closer examination, it was found to be the scurvy [difficult diagnosis]. This disease seemed to absorb all others; so that for six weeks there was *no talk of any other distemper in the town.* The calamity became great and *universal;* few escaped it; many deprived of all motion, wasting away by piece-meal, toothless and starved, as not being able to chew their food, died in a most piteous condition.

"The scurvy proceeded from *grief and disappointment*, as also from unwholesome food. The States of Holland had taken care to provide this city for a siege, with *rye, cheese, and dried fish.* The cheese and fish had at times been renewed, but their stock of *rye had been in store for thirty years*, and was become quite spoiled and musty. Being altogether improper for baking, it was mixed up with other grain, and all who ate of it soon began to be attacked with the scurvy. Eating of the old cheese, which was rotten, as also of dogs and horse-flesh, but particularly the wetness of the season, contributed much to the production of the distemper: the air which the soldiers breathed, and the houses where they lay, being ex

tremely damp. They also lay together, so *received it by infection;* for the disease proves infectious when persons use the same improper food, and breathe the same impure air [like quarters are called "fever nests" now-a-days.] In some the gums were rotten; in others spots only appeared on the body, especially in such as had *discharges of blood,* which sometimes prevented, at other times diminished the swelling of the gums. The spots were chiefly upon the legs. They were also to be seen upon the back, arms, breast, neck, as likewise upon the face, even when *the gums continued sound;* chiefly in such as took care to preserve their teeth, and were continually washing their mouth with astringent compositions of salt, alum, and the like. *At first the spots were red, then became purple, afterwards livid, and last of all quite black.* The livid spots were very dangerous, but the black still more malignant and fatal. A few of the eruptions put on the appearance of a St. Anthony's Fire [erysipelas scurvy], and the cuticle afterwards fell off in scales. In most patients the skin was of a purple hue. *An enervated, heavy and languid body, without having any complaint of real sickness,* and a fetid breath, were symptoms common to all. The knees became afflicted with violent pains at times. The tendons of the *posterior muscles of the thigh turned as rigid and hard as a piece of wood,* so that the leg being bent altogether back to the buttock, it became quite immovable [the angle]; and of the joint in the knee, there remained no vestige. Exquisite pains were felt along the course of the sciatic nerve [sciatica], and in the deep-seated joint of the thigh bone. *Some expired suddenly and unexpectedly when at their meals;* especially those who had been troubled with palpitations of the heart. The heart itself is greatly affected in the scurvy with palpitations, tremors, frequent stoppage of its motion, a frequent and great oppression, and a defect of natural heat; hence a redundance of watery and excrementitious humors in the whole body passing off by *profuse spitting, urine, and fetid sweats.* In many the gums grew up to such a pitch as to bury the whole teeth, and sometimes *part of the cheek bone dropped off.* In this case the misery was intolerable, though the pains gave some little relief by short intermissions; the gangrenous flesh of the gums not having been

speedily removed; the taint had spread and preyed upon the bone. The disease was seldom accompanied with a fever, but frequently with a *flux. Where there was a fever, it was generally slow and irregular.* We observed one or two of *these fevers somewhat to resemble the plague. The mouth was dry,* though the patient had but little inclination to drink; the pulse was small and irregular; there were frequent retchings and at times an unspeakable uneasiness in the breast; hard, black, crusty abscesses appeared on the legs, the anguish of which occasioned often a pain, seldom a tumor in the groin. But fevers at this time were very uncommon.

"*Of those who were afflicted with the flux, few escaped*, and that with great difficulty. They afterwards became bloated, relaxed, and *dropsical.* Watery swellings of the testicles were frequent [hydrocele]. The unhappy patients took a dislike to drugs, and were apparently injured by the operation of violent purges. Some died early in the disease, viz.: those who had seldom any evacuation of blood by the nose or stool, and seemed from the beginning indolent, dispirited, and blown up as it were with wind. Their stools were greasy, fetid, and of various colors, but not frequent. The blood drawn from the veins appeared livid, was fetid and thick, but did not coagulate. *The discharges by stool in this disease were indeed commonly watery and greasy, but a flux did not relieve the disease.* When there were acute pains of the belly, intestines, and stomach [cramps], in this case little hopes of life remained, by reason of the intenseness of the pains, the strength of the patient having been exhausted by the violence of the distemper. In a word, whether the disease was protracted to a longer or shorter period, most died with an inward indisposition in the belly; *the flux proving rather a distinguishing sign of the scurvy than a critical and salutary discharge* [cholera].

"It was observed before, that the scurvy broke out about the equinox, and it quickly increased to an almost incredible degree. On the 20th of March, 1625, an account was taken of the number of patients, and there were found sixteen hundred and eight soldiers laboring under it. * * * At this period fluxes were so trifling and uncommon, that we gave

no attention to them, directing our whole care to remove the disease itself.

"The number of the afflicted began afterwards daily to decrease, owing partly to the * * more liberal use of wine, permitted at this time to be publicly sold, * * also the days began to lengthen, the sun to shine forth with comforting heat, and the nights grew warmer; so that in less than a month's time we found the number of scorbutic patients reduced to eight hundred. But these were left in a most pitiful condition indeed! the shops were now exhausted of medicines; the ordinary remedies administered did not avail; our provisions grew daily worse, and so scarce, that the corrupted grain, which by order of the magistrates had been formerly condemned was now ordered to be distributed to the soldiers, and to complete our misfortunes, no appearance presented itself of relief, all expectation from the Dutch army was gone: *una salus victis nullam sperare salutem.*

"We were at this time quite at a loss what measures to pursue: however we put on the best countenance. We changed the medicines, extolled the efficacy of our prescriptions, doubled their dose, talked largely of the number cured, magnifying in every respect our skill and success. By these means we protracted time for near a month longer. But the miserably afflicted began to discover the deceit, particularly such of them as had been before shut up in besieged places, and had observed the like artifices practised. The soldiers, no longer able to suffer in a situation harder to be borne than human nature is accustomed to, gave themselves up entirely to despair. They refused to do any longer duty, delivered up their arms to the Governor, and threatening a mutiny, conspired to surrender the city to the enemy. This the terriblest circumstance of all, viz.: their absolute despair, gave rise to a variety of misery; hence proceeded *fluxes*, *dropsies*, and *every species of distress*, (in the original, *Omne chaos morborum*,) attended with a great mortality.

"The physicians at this time giving up entirely with the cure of the disease, direct their whole art to remove the *flux*, and alleviate the more pressing symptoms. Nothing was left unattempted to recall the drooping spirits of the soldiers, and

to allay their turbulent minds. Recourse was had even to opium itself. By such means a truce was gained, but of short duration; for the evacuations being thereby stopped, the legs became more unwieldly. A *dropsy ensued*, the tendons became rigid, and sudden death stepped quickly in to put an end to farther woe.

"On the 2d of May, 1625, when the Prince of Orange heard of their distress, and understood that the city was in danger of being delivered up to the enemy by the soldiers, he wrote letters addressed to the men, promising them the most speedy relief. These were accompanied with medicines against the scurvy, said to be of great price, but still of greater efficacy; many more were yet to be sent. The effects of this deceit were truly astonishing! three small phials of medicine were given to each physician, not enough for the recovery of two patients. It was publicly given out, that three or four drops were sufficient to impart a healing virtue to a gallon of liquor. We now displayed our wonder-working balsams. Nor were even the commanders let into the secret of the cheat put upon the soldiers. They flocked in crowds about us, every one soliciting that part may be reserved for their use. Cheerfulness again appears on every countenance; and *universal faith* prevails in the sovereign virtues of the remedy. The herbs now began to spring up above the ground; we of these made decoctions, to which wormwood and camphire were added, that by their prevalent flavor, the medicines might appear of no mean efficacy. The stiff contracted limbs were anointed with wax melted in rape-seed, or lint-seed oil. The invention of new and untried physic is boasted; and amidst a defect of every necessary and useful medicine, a strange medley of drugs was compounded. The effect however of the delusion was really astonishing: for *many were quickly and perfectly recovered. Such as had not moved their limbs for a month before, were seen walking the streets sound, upright, and in perfect health.* They boasted of their cure by the Prince's remedy; the motion of their joints being restored by a simple friction with oil, nature now of itself well performing its office, or at least with a small assistance from medicine. Many who declared they had been rendered worse

by all former remedies which had been administered, recovered in a few days, to their inexpressible joy, and the no less general surprise, by the taking (almost by their having brought to them) what we affirmed to be their gracious Prince's cure.*

"Soon after their old calamity *the plague broke out again,* [acute diagnosis.] Not one in a hundred escaped of those who were seized with it. So that a victorious Spanish army, an eight months' famine, the rage of the plague within, and the fury of the bomb-shells from without, depopulating and laying waste the city, the promiscuous funerals of parents and friends, the dismal apprehensions of a disheartened and reduced garrison, want of medicines and common necessaries, bad and unnatural food, having all conspired to the ruin of this important place, it was surrendered by capitulation in June."

The date of this siege, 1625, was the opening of a very pestilential period. Webster says, vol. i. p. 181, "The diseases of this period continued to multiply and grow more malignant in 1624, when the epidemic assumed the form of the spotted fever. In 1625 this fever turned to the plague, and in 1626 changed back to the spotted fever, not an unusual fact. The plague in 1625 swept away 35,000 of the citizens of London." The elemental disturbances, as usual, were wonderful, the winters cold, and the summers excessively hot. In 1626 the city of Lyons lost 60,000 of its inhabitants by the plague, and in the following years all Europe was visited by it. In 1627 and '8, famine and plague in Augsburg, &c.

"On the accession of Charles I., 1625, the plague broke out in London, even more vehemently than at the time of his father's coronation."—(*Census of Ireland, Part V. p.* 107.)

This shows the condition of things *without* at the time Vander Mye recorded the state of the besieged city of Breda *within*. Although the bad food and quarters were sufficient to have produced the chaos of diseases spoken of, still, to know that the elements were in a disturbed condition the world over, vegetation sickly, crops short, and famine and pestilence

* This curious relation would perhaps hardly gain credit, was it not in every respect consonant to the most accurate observations, and best attested descriptions of the disease.—(*Note by Lind.*)

following, is a historical matter of no mean importance to a medical philosopher in scrutinizing the nature of disease as recorded by Vander Mye. First, the plague, then the spotted or petechial fever as supposed, but finally decided to be the scurvy, and as summer came on, the watery fluxes, dropsies, and every species of distress, amounting to a perfect chaos of mixed up intercurrent diseases. Now, it appears to us unworthy the attention of scientific minds to study any nosological arrangement here, in the hope of benefiting humanity by arriving at a complete knowledge of 250 or more distinct diseases, their 250 or more distinct causes, and their 250 or more nostrum methods of cure. It is so plain to us that defective nutrition was the *cause*, and that the scorbutic diathesis was the *first link* in this ugly chain of consequences, that we can only see one primary pathological condition—one disease, no matter what the epiphenomena. These could never be the same in different constitutions; for the most uniform of the so-called diseases of nosologists, differ so as to greatly puzzle the most skilful in diagnosis often, before they can tell what is the matter, or what to do.

Nor is it any objection to the theory of a one primary pathology, that certain forms of disease are infectious, or may be propagated by the secreted products or exudates. They become as poisons, and derange nutrition in a similar manner. There is no evidence of zymosis, or even of catalysis. Besides, there is no other way of accounting for first cases of contagious forms of disease, and their appearance *de novo* during every pestilential period, but by the operation of general causes impairing nutrition: and these facts meet our observation at every turn.

The law of healing by faith, and the imagination, is well attested by this writer. It is confirmed by Lind; and it, of itself, is a powerful testimonial in evidence of a one primary pathology. A new impulse is given through the mind to the nutritive energies of the system. The subject begins to breathe deeper; resolution follows, and exercise greatly aids; the heart propels the blood with greater vigor; there is call for nutrition, and the stomach performs its office better; and thus the all but dead are revived. The heat of another person,

even by the laying on of hands, may, in certain instances, have been the agent to turn the scales in favor of recovery, as from a trance or apparent death.

Hildanus on Scurvy, 1627.—"There is here a short letter to the author from Ludov. Schmid, giving an account of the Prince of Baden's youngest son, a child of fourteen months afflicted with the scurvy, who was cured with antiscorbutic medicines. Hildanus, in his answer, mentions an obstinate scorbutic ulcer cured likewise by antiscorbutic medicines; which is all that is to be met with on this disease in the works of that celebrated practitioner."

Faculty of Physic at Copenhagen on Scurvy, 1645.—"Sect. 1. They observe, that it is a disease frequent among them and other northern nations. It attacks the patient in various shapes, according to his habit and constitution, or other diseases with which it may be complicated. Its immediate cause, is a bad digestion, owing to a crude, corrupted humor, oppressing the organs, both of the first digestion in the stomach, and of sanguification. Hence ensue for the most part difficulty of breathing, swelling, putrefaction and bleeding of the gums; loose teeth; a weakness, swelling, and stiffness of the legs; spots, and the like. The external causes are, 1. The impure, gross, moist, and cold air of their country; those persons being most subject to it who live in the northern parts near the sea, or where they are surrounded with lakes. 2. Gross and corrupted food, viz.; bad bread, not sufficiently baked, made of spoiled flour; salted and dried flesh and fish; old cheese; rancid butter; peas, and other grains, when spoiled; together with unwholesome malt liquors. 3. Those of a sedentary inactive way of life are most afflicted with it; together with those, 4, who are apt to be costive, or labor under a suppression of any natural evacuation; as also the low-spirited and dejected. 5. This disease *often succeeds others;* such as obstructions of the liver and spleen, and *particularly quartan agues.* It is likewise *hereditary and infectious.* From these external causes proceeds the internal or immediate cause of the disease before mentioned. Although the scurvy

may not easily be discovered in the beginning, by reason of its appearing under the form of other diseases, [if scurvy appears under the form of other disease, then *other diseases are scurvy;*] as also from its unexpected and slow attacks,(so that, in countries where it is prevalent, *we are to suspect anomalous diseases not yielding to the usual remedies,* especially if the patient is of a melancholy disposition, *to be scorbutic;*) yet when the distemper is violent, it is easily known. It is usually preceded by a lassitude over the whole body, weakness of the legs, difficulty of breathing when walking, a livid color of the face, and by greater fulness of the habit of body. In its progress, flying heats become troublesome; the gums itch, with a great flow of saliva; the urine is *sometimes turbid, at other times quite watery.* When farther advanced, the difficulty of breathing is so great, that the patient cannot walk or move himself but he *falls into a faint;* of which he recovers when laid in bed. It is attended with colic pain; the gums are swelled, and bleed upon the least touch; the teeth are loose, and fall out without pain, the flesh at their roots being quite putrid; the breath is fetid; the legs swell, and grow stiff, so that the patients cannot walk. Sometimes on the legs, and even over the whole body, there appear various red, purple, or azure spots. Now and then they are afflicted with the *St. Anthony's fire,* malignant ulcers, and nocturnal pains; and sometimes the body wastes away. *Different fevers, and various symptoms almost of every kind that can be mentioned, often accompany this disease* [mark this reader]. The urine is turbid, thick, and clayish, of a purple color; but it does not long retain the same appearance. The pulse is variable; sometimes weak, at other times strong, when the patient seems very weak; and sometimes it is scarce to be felt. This disease is easily removed by proper remedies in the beginning; but when advanced, it is not so easy to prevent relapses. When proper diet and medicines are neglected, health is seldom restored. *It commonly ends in a dropsy or consumption.* [Quere, can it begin as one disease and end as another except in name; a mere ideal difference?] A difficulty of breathing, and black spots on the legs, are dangerous symptoms; as also continual pains and flatulencies about the navel. *An hereditary scurvy is seldom*

cured. It is a more dangerous disease in old persons than in young. When the mouth is affected, remedies are speedily to be used, otherwise the disease spreads farther, and may infect the whole throat. *Fevers and ulcers accompanying this disease, cannot be cured without the assistance of antiscorbutic medicines* [hear.]

"Sect. 2. Prevention is proposed by living in dry lodgings; fumigating the apartments with the steam of aromatic woods and gums; and by avoiding such food as has been observed productive of the disease. For this is likewise recommended the use of a wine medicated with wormwood; and several other warm, bitter, aromatic ingredients. The body is at all times to be kept in a lax state, and the other evacuations (especially when suppressed) are duly to be promoted. Exercise, baths, physic in the spring and autumn, are also necessary. Those, who are much subject to it, are to take now and then two or three spoonsful of an antiscorbutic water; which may be made more pleasant and stronger, by adding occasionally some of their scorbutic syrup, [syrup of brooklime and scurvy-grass.]

"Sect. 3 and 4, containing the indications of cure and the treatment of the symptoms, have nothing new."

From 1635 to 1645, was a very pestilential period.—(*See Webster*, vol. i. p. 184—*also Census of Ireland*, Part V. p. 107.)

Drawitzs on Scurvy, 1647.—"This book has undergone no less than four editions, being esteemed the best written upon the subject in the German language. The diseases treated of as proceeding from the scurvy, are as follows: 1. The Gout. 2. A spasmodic disorder. 3. The Palsy. 4. Pains in the extremities, though not in the joints. 5. The Headache. 6. The Toothache. 7. The Pleurisy. 8. The Bellyache; or the scorbutic cholic, and iliac passion, [cholera morbus.] 9. A pain about the os sacrum, back, and perinæum, resembling a true fit of the stone. He had been informed from the East Indies, that the sailors there were speedily and effectually cured of the scurvy, by eating oranges; which he finds great difficulty to reconcile to his theory of the disease. He had also heard from Dantzick, that some masters of ships carried

out with them an acid water, got in the preparation of diaphoretic antimony, which prevented the scurvy at sea."

TIMÆUS ON SCURVY, 1662.—"This author gives us many histories in his writings, of such cases as he deemed scorbutic, viz., Book I. of practical cases and observations; case 3, a scorbutic headache; case 7, a scorbutic delirium; and case 15, the hypochondriac melancholy, beginning with the scurvy. In his 3d book, case 24, an hydrops ascites, joined with the scurvy; and case 32, the affectio hypochondriaca, with this disease also; case 35, a scurvy and atrophy, of which the patient died; case 36, the arthritis vaga scorbutica. Book 6, case 15, scabies, prurignosa scorbutica. Book 8, case 15, a scorbutic tertian; and case 18, a scorbutic quartan.

"In his epistles, book 3, epistle 10, 11, and 12, the cachexia scorbutica; epistle 20 and 28, the affectio hypochondriaca scorbutica; and book 5, epistle 9, the arthritis vaga. His method of cure, which has nothing new in it, is to be found in the 34th case of his 3d book, by which he says *he generally succeeded, unless the scurvy was hereditary, or very deeply rooted.*"

MOELLENBROECK ON SCURVY, 1663.—"He makes the scurvy a most universal disease, a calamity common almost to all mankind. Its cause is, a volatile salt in the blood, endued with great acrimony and malignity. The last of these properties he thinks demonstrable, from the sudden weakness and prostration of strength, great oppression and difficulty of breathing which occur even in the beginning of the disease, as if the patient had swallowed poison; as also from an eruption of livid spots, which often make their appearance after death."

WILLIS ON SCURVY, 1677.—"He sets out with telling us, that a great variety of symptoms, and diseases of the most opposite kinds, are supposed to proceed from the scurvy; which, like a condemned and infamous name, has the scandal of most diseases charged to its account. * * * He observes, that no simple description or definition of this distemper can be given; and, consequently, that the best method of describing

it, is according to the different parts affected of the body; in all which it produces manifold symptoms. [Regional arrangement.]

"He begins with the head: where the scurvy causes headaches, violent and habitual; and sometimes vague or periodical; oftentimes sleepiness, and dulness of the spirits, at other times obstinate watchings; frequent giddiness, convulsions, palsies, salivations, ulcers of the gums, loose teeth, and fetid breath.

"The breast is affected with pains in different parts of its membranes, chiefly on the breast-bone, where they are very violent, acute, and darting; frequent asthmas; difficult and unequal respiration; straightness of the breast; violent cough; irregular pulse; palpitation of the heart; frequent faintings, and the continual dread of them.

"In the abdomen, where this disease has its principal seat, it begets a multitude of evils, viz.: nausea, *vomiting*, cardialgia, flatulencies, frequent colics, and most troublesome shifting pains; and *almost constant purging*, sometimes the *dysentery*, or tenesmus; the atrophia, and now and then the *ascites*. The urine is very often reddish and lixivial, having a cake suspended in it, or adhering to the sides of the glass: and sometimes, though seldom, a great quantity of pale watery urine is discharged.

"In the limbs, or even over the whole body, there are wandering pains, often very acute, and becoming worse at night; a lassitude; wasting of the flesh; pain of the back; a weakness of the other joints; spots of various colors on the skin; tumors, tubercles, and often malignant ulcers; a stupor or stinging pain about the muscles; a sense of cold as it were in the parts; contractions and subsultus of the tendons. Besides these, scorbutic people are subject to irregular effervescences of the blood, *irregular fevers* and *profuse hæmorrhages*. * * * The principal causes are, unwholesome air, and a vitiated texture of the blood by preceding sickness. In this distemper, either the blood, nervous juice, or both are affected. The fault of the blood is its being either sulphureo-saline, or salino-sulphureous. If the first be the case, and the sulphurs superabound, then repeated bleed-

ings, a cooling regimen, and the most temperate remedies are proper; avoiding above all things the hot and acrid antiscorbutic medicines. But, on the contrary, where there is the salino-sulphureous state, and the salts of the blood are predominant, then the warmer medicines are proper, and such as are possessed of a volatile salt, together with steel and the like. The fault in the nervous juice is threefold. It is, 1st, Either too thin and poor; or, 2dly, It has degenerated from its spirituous saline nature into a sharpness; or, 3dly, It may abound with foreign and morbid particles. And according to these imagined faults in the blood and nervous juice, he makes a second distribution of the symptoms, and accounts for the whole number he enumerates in this disease, which he supposes to be *hereditary and infectious.* [What queer notions and theories.]

"The indications of cure are divided into three classes. 1. The preservatory; under which he gives the process of cure, or rather the method in general of removing the causes of the disease. 2. The curatory, or means of alleviating and relieving the most urgent symptoms. The 3d, comprehends what he calls the vital indications, or the means of preserving and restoring the strength and health of the patient.

"The cure is accomplished by purging, digestive and antiscorbutic medicines; with blood-letting occasionally repeated. * * * Those evacuations being made according as they are severally indicated; provided no particular symptom be urgent, he proceeds to the general method of cure, viz.: removing the cause, and extirpating the disease. For these purposes, the digestive and specific antiscorbutic medicines (divided into two classes, viz.: hot and cold) are to be given every day, unless when under the operation of a purge; to these, if needful, sweating medicines may be joined. For the cold scurvy, he abounds with an ample variety of antiscorbutic compositions. In the hot scurvy, the more cooling and temperate antiscorbutics are necessary. Lastly, We have what he calls the vital indications. He here directs the use of cordials, restoratives, opiates, etc., together with a proper diet."

Willis has been abused like a pickpocket, not only for hold-

ing all diseases to be scorbutic, but also for his regional arrangement of symptoms. In the first he was unquestionably right, and we see no objection to the second: Dr. Marshall Hall has done the same thing in describing the symptoms of "a serious affection"—the nursing sore mouth or land scurvy, not recognized. See p. 180, v. i.

Willis wrote and published just after the pestilential period that culminated in the plague of London, 1665, and it is worthy of notice, that nearly all the writers on scurvy of that period ascribe all diseases to the scorbutic taint.

Barbette on Scurvy with Notes by Deckers.—"Barbette, gives a description of the scurvy, and its symptoms, pretty much from Eugalenus: cautions against bleeding, and violent purgatives, in the cure; but thinks gentle physic proper at times, and that the diseased humor should be prepared by inciding remedies; the most proper for this purpose being volatile salts. After a long list of the common antiscorbutic medicines (to which Deckers subjoins many more, adapted to the particular symptoms of the disease) he observes, that the spirit of scurvy-grass and dulcified spirit of sal ammoniac, are the principal remedies. He concludes with two cases: one a young man not able to walk through his chamber, who recovered in seven days by a decoction of *rad. raphani* in whey; another, a merchant, having scorbutic spots, who was cured by the use of spir. sal. ammoniac. and proper diet. Deckers adds another case, and seemingly a very genuine scurvy, which was removed by fourteen drops, for a dose, of the sp. sal. ammoniac, given in an infusion of *rad. raphani* in wine."

Charleton on Scurvy, 1672.—"Observing it might be a task fit only for Jove himself to give an accurate account of the scurvy, and all its symptoms, he thinks it necessary to give only a catalogue of those which most frequently occur, and are the most afflicting. In this number he ranks almost all the symptoms enumerated by Eugalenus, Sennertus, and Willis; and afterwards distinguishes the disease itself into three kinds, from its different *causes*. The first is denomiated

a *rancid scurvy*, from the predominancy of the sulphurs in the blood combined with some of its salts; the second, *a scurvy from fixed salt*, where the tartareous or terrestrial saline particles prevail; and the third, an *acid scurvy*, owing to a sharpness and acidity of the blood and juices.

"The symptoms peculiar to the first species, are, *spots, pustules, tubercles*, and *ulcerations*, upon the external parts of the body; internally, *heartburn, vomiting, purging, colics*, together with frequent effervescences of the blood. When this species of the scurvy is inveterate, the nervous system becomes affected. The symptoms are then *a giddiness; tensive headache; sleepiness* or *immoderate watchings;* the *night-mare*, and sometimes *madness*.

"Of the second species, the symptoms are, *straightness of the breast, palpitation* of the heart, and *faintings; numbness* and *lassitude* of the body: *convulsive motions,* and *wandering pains* in the joints.

"In the third, or acid scurvy, there are continual *irritations* of the nerves; which are increased by the slightest passion of the mind; frequent *rigors* (a certain sign of acidity in the humors); a sense of cold in the back part of the head, and spine of the back, sometimes running through the limbs; *flatulent spasms; convulsions*, and what are commonly called *hysteric complaint*; sometimes *costiveness;* at other times the *dysentery; melancholy*, with *dread* and *despair; atrophy; ulcerations;* lastly, a *gangrene*, which generally closes the scene. * * * When this species of the scurvy has become inveterate and confirmed, it begets most violent and dreadful symptoms, viz., intolerable nocturnal pains, *cancers, &c.*

"In the cure of the first species, we are to begin with gentle cholagogue purgatives prudently administered and repeated, and with bleeding, if the disease is but commencing; proceeding to the digestive or temperate alterative medicines, that may correct the hot sulphureo-saline state of the humors.

"For cure of the second species, proceeding from a fixed salt, the only proper medicines are those which abound with a volatile salt, viz. the warm antiscorbutics.

"The cure of the third species, or acid scurvy, is to be begun with gentle laxatives, which makes way for bleeding;

proceeding afterwards to deobstruents (such of this class as are mild) joined with temperate antiscorbutics, but especially such remedies as are proper in the hypochondriac disease with obstructed viscera. Afterwards he endeavors to correct the acidity. The cure here, as in the before-mentioned scurvies is to be concluded by corroborants."

SYLVIUS ON SCURVY, 1674.—"This celebrated author has little upon this disease but theory. He only observes that there is no distemper in which volatile salts are so efficacious and necessary as in the scurvy; herbs abounding with these salts, as scurvy-grass, rochett, cresses, horse-radish, and mustard seed, being its best remedies. * * * Moreover, acids that are spirituous, either of the natural or chemical sort, are likewise serviceable in the scurvy, viz., juice of oranges, sorrel, &c., sp. sal. vel nitr. dul. For cure of the *scorbutic spots observed after the epidemical fever*, of which he is there treating, he mixed these volatile salts and spirituous acids together; which proved very serviceable, and sudorific."

GIDEON HARVEY ON "THE DISEASE OF LONDON"—SCURVY, 1675.—"He divides the disease into two great branches, viz., a mouth-scurvy, and leg-scurvy. To which a third may be added, which he calls the joint-scurvy. They are thus denominated from the parts affected. * * * He afterwards makes many other distinctions in this disease. For a preservative against it he recommends change of air, and wholesome, nourishing, *easy-digested food.*"

MUNTINGIUS ON SCURVY, 1681.—Nothing of any importance from this author, according to Lind.

CHAMEAU ON SCURVY, 1683.—"He makes it to be a contagious dissolution of the blood, by a very acrid subtile salt; confutes the distinctions made of the disease by Dr. Willis, and extols milk as the most excellent antiscorbutic remedy; accounting all warm and acrid medicines for the most part pernicious."

DELLON ON SCURVY—A VOYAGE TO THE EAST INDIES.—"This is the most dangerous and troublesome of all the dis-

tempers incident in a long voyage, being *contagious, and scarce ever to be cured at sea.*" * * * * *

Nothing new or peculiar in the symptoms or cure.

BLANCARD ON SCURVY, 1684.—"Though Willis and Charleton have written the best upon the scurvy, they have not yet solved all the difficulties that occur in it; which this author thinks he does by his theory of fermentation, founded upon the Cartesian philosophy. The malady proceeds from a thickness of blood. Of this there are two kinds, viz.: a cold and phlegmatic viscidity; or there may be a heat and an acidity in that fluid: hence the disease is properly divided into a hot and cold scurvy. In the first species, whatever incides and attenuates viscid pituitous humors, such as the warm aromatics and spices; in the other (or acid scurvy) the testaceous powders, and all other absorbents; fixed, volatile, and alkaline salts; chalybeates, but particularly drinking of tea and coffee, are the proper remedies. Bleeding is of no use. Vomits and purgatives are sometimes necessary. All acids, viscid and salted foods, are pernicious."

ETTMULLERUS ON SCURVY, 1685.—"He accounts the scurvy the highest degree of the hypochondriac disease. All the symptoms of this latter occur in it, besides many more. He has nothing new, all he says being transcribed from other authors. * * * He observes, that mercury is extremely pernicious in the scurvy; and so much dreaded by the Dutch, *that even in venereal cases*, they were afraid to use it, on account of their scorbutic habits of body."

SYDENHAM ON SCURVY, 1685.—"The author has nowhere treated expressly of this disease, but in a posthumous work ascribed to him. The scurvy is said to be accompanied with, 1, spontaneous lassitude; 2, heaviness; 3, difficulty of breathing, especially after exercise; 4, rottenness of the gums; 5, fetid breath; 6, frequent bleeding at the nose; 7, difficulty of walking; 8, a swelling sometimes, at other times a wasting of the legs; on which spots always appear, that are either livid, or of a leaden, yellow, or purple color; 9, a

sallow complexion. For cure, eight ounces of blood are to be taken from the arm, *provided there be no sign of a dropsy;* next morning a purging potion is to be given, and repeated twice, at the interval of three days betwixt each dose. On the intermediate days the antiscorbutic medicines are to be used, and continued for a month or two. But the more genuine sentiments of this candid author are to be found in his other works.

"Cap. 4, de febribus continuis, A.D. 1661, 62, 63, 64, he observes, that the two great subterfuges of ignorant physicians, were malignity and the scurvy; which they blamed for disorders and symptoms often owing to their own ill management. Thus, whatever bad and irregular symptoms have been brought on in fevers, perhaps by their unseasonable evacuations, these they ascribe to the malignity of the disease; but if the long continuance of the distemper should wipe off this aspersion of malignity, whatever afterwards obstructs the cure must be the scurvy; both of which are blamed without reason.

"Sect. 6, cap. 5, de rheumatismo. To deliver my sentiments freely, though I do not at all doubt that the scurvy is to be met with in these northern countries, yet I am persuaded it is not so frequent as generally supposed. For most of those disorders we term scorbutic, are the effects of approaching ills not yet formed into diseases, or the relics of some disease imperfectly cured. Thus, for instance, where a matter suited to produce the gout is newly generated, there appear various symptoms, which occasion us to suspect the scurvy; till the formation and actual appearance of the gout remove all doubt concerning the distemper. And in the same manner, many symptoms ascribed to the scurvy afflict gouty people after the fit is over, especially if it has been improperly treated. And this is to be understood not only of the gout, but also of the dropsy. The proverb is, That where the scurvy ends, there the dropsy begins; which is to be understood in this sense, that, upon the appearance of the dropsy, the preconceived opinion of the scurvy falls to the ground. And the same may be said of several other chronic diseases that are but forming, and others that are not totally cured. He however thinks,

there is a species of rheumatism near akin to the scurvy in its capital symptoms, *and which requires the same method of cure.* The pains shift from one place to another; rarely occasion a swelling; there is no fever; but it is attended with irregular symptoms; such especially as have taken much of the Peruvian bark are subject to it. Though it is otherwise a very obstinate disease, yet it may be effectually cured by the use of the antiscorbutic electuary before mentioned, and a water distilled from scurvy-grass, brook-lime, cresses, etc."

A moment's attention to this reasoning of Sydenham will show it to be fallacious. He admits the symptoms of the *forming stage* of diseases to be so much alike, and so much like those of scurvy, that nobody can tell the difference till a group of *epiphenomena* declare the gout, dropsy, or something else, to be the disease, instead of scurvy. Here is virtually acknowledged, in the *forming stage*, the general dyscrasia, predisposition, or primary pathology which *we* pronounce to be the *scorbutic diathesis*, and to arise in all cases and in every instance from defective nutrition. We know of this forming stage of disease and how it comes, and how it lies latent, and all about it, and how exciting causes fan it and flare it up into this, that, or the other form of disease. This is absolute knowledge with the profession: it is known as positively as we know we live. There is no other forming stage of disease known. Sydenham's "thus, for instance, where a matter suited to produce the gout is newly generated, there appear various symptoms, which occasion us to *suspect the scurvy,* till the formation and actual appearance of the gout remove all doubt concerning the distemper," is as clear an exposition of all that is known of primary pathology, aside from the scorbutic diathesis, as is to be found in all the archives of medical literature; and it must be apparent to every one that this is nothing but assumption. The assumption that "a matter is newly generated suited to produce the gout," and so of other diseases, does not prove it, or them to be idiopathic. The matter is not shown—this new law of generation is not explained—and, take notice, the "various symptoms" so far as they "appear" Sydenham acknowledges, "*lead us to suspect the scurvy.*" The testimony of this eminent

opponent, then, is *for*, not *against* scorbutic primary patho logy. So far as appearances are to be relied on all is scurvy, till —— what? till the "actual appearance of the gout," or "dropsy," or "other diseases that are but forming," settles the hash. How know it is the gout? Rush says, phrenitis, gastritis, enteritis, nephritis, and rheumatism, all appear at the same time in the gout. (Inquiries, vol. 4.) Know it by the swelling of the toe, one of the later symptoms? suppose the patient dies before the toe swells, what then? Everybody can see the fallacy of this *a posteriori* method; and passing strange to say, all pathology of the present day rests on it! As a general thing nobody knows what is the matter till the big toe swells (gout), or the belly fills with water (dropsy), or the water is vomited and purged (cholera), etc.

Now, it appears to us that we have, in the above small paragraph, redeemed our promise (see vol. i. p. 311) to show Sydenham's reasoning to be fallacious.

Lister on Scurvy, 1694.—"He treats of the scurvy next to the venereal disease, because they are nearly allied; having so many symptoms common to both, that they are not easily distinguished from each other, but by an experienced physician."

We have no doubt about the scorbutic taint being the element in which all venereal affections revel and run riot—the explanation of phagedena, the mercurial disease, phthisis following syphilis, etc. And it is probably the only element in which susceptibility lies. Itch-scurvy is contagious, typhus-scurvy also, and other forms.

"The scurvy has not been expressly treated of by the ancients, as being in their time prevalent only in a remote corner of the world little known to them. Eugalenus was the first who accurately described this disease. It was formerly confined to Flanders; but has acquired great strength since our navigation to the Indies, being now universal, and common to seamen of every nation. He ascribes it to the use of salt food, old saltish cheese, and the like. * * * Juice of scurvy-grass, lemons, and oranges, all sorts of fruits, and pot-herbs (the more acid the better) are excellent remedies;

as also vinegar, and spirit of vitriol. He pretends to be the first who takes notice of fatal hemorrhages sometimes occurring in this disease, and gives some instances of them from his own observations."

COCKBURN ON SCURVY, 1696.—"The scurvy being generated by the salt provisions altogether unavoidable at sea, makes one of the constant diseases in navies. A fourth part of the seamen do not contract it directly, in declining from a state of health, but by being put too soon on the sea-provisions, after recovering from fevers, and other distempers. It attacks commonly the weak, lazy, and inactive. Refraining from the sea-diet, and living upon green trade (as it is called) on shore, proves an absolute cure. It is worthy observation, how suddenly and how perfectly they recover of this distemper by eating greens, viz.; coleworts, carrots, cabbages, turnips, etc. Men put on shore in the most pitiful condition that can be imagined, are able in three or four days, by means of this food only, to walk several miles into the country. * * * He condemns the division into a hot and cold scurvy, made by Dr. Willis. The first [the hot or febrile] alone is properly the true and real scurvy, and the latter nothing else but the hypochondriac disease."

GAWKES ON SCURVY, 1705.—"This practical treatise is esteemed the best that has been published on scurvy in the Dutch language. * * * From a contemplation of the symptoms, and an enumeration of the remedies, by which he performed the cure of patients, he infers the scurvy does not proceed from an acid or thick blood, but from a volatile alkalious and dissolved state of that fluid. The book contains an accurate description of the scurvy. * * * He describes the *cases of some young children* who undoubtedly labored under this malady."

PITCAIRN ON SCURVY.—"The symptoms of the scurvy are said to be, a redness, itching, putrefaction, and bleeding of the gums; loose teeth; spots on the legs, first red, then livid, and blackish; an unusual lassitude; a red sandy sediment in the urine, so that it appears lixivial; an unequal pulse; wan-

dering pains; toothaches; redness, or heat of the body; fetid breath; fluxes with or without blood. The immediate cause is, a broken texture of the blood; and this dissolution of that fluid may be occasioned even by bleeding; which is by no means proper for scorbutic patients. But he talks only of the hot scurvy, or what Willis terms the sulphureo-saline; this being properly the disease, if we would distinguish it from the hypochondriac distemper. He recommends milk, or a milk diet, as the best cure. * * * Chalybeates are to be given, with the addition of astringents, and the fixed temperate antiscorbutics, especially if faintings, fluxes, or a difficulty of breathing, afflict the patient. For the wandering gout, or scorbutic pains, after gentle purging, a decoction of guaiac and sarsaparilla, is to be administered; observing, that if these pains are attended with few or no other scorbutic symptoms, they are then to be deemed rheumatic."

Boerhaave on Scurvy, 1708.—"Besides the common causes usually assigned by authors as productive of the scurvy both at sea and land, he, from Sydenham, adds that particular of having taken too great a quantity of the Peruvian bark; then describes the symptoms peculiar to the malady in its beginning, progress, and more advanced stages, contained in the four following sections.

1. "An unusual laziness; an inclination to rest; a spontaneous lassitude; a general heaviness; a pain of all the muscles as after too great fatigue, particularly in the legs and loins; an extreme difficulty in walking, especially up or down a steep place; in the morning upon awaking, the limbs and muscles feel as if wearied and bruised. 2. A difficulty of breathing, panting, and almost suffocation, upon every little motion; a swelling of the legs, often disappearing, and an inability to move them, from their weight; red, yellow, or purple spots; a pale tawny color in the face; a beginning stench of the mouth; a swelling, pain, heat, and itching of the gums, which bleed upon the least pressure; bare and loose teeth; pains of different sorts wandering over all parts of the body, external as well as internal, occasioning surprising anguish, resembling pleuritic, stomachic, iliac, colic, nephritic,

cystic, hepatic, and splenitic pains. Hemorrhages occur in this stage, but slight. 3. A most offensive rottenness, inflammation, bleeding, and gangrene of the gums; loose, yellow, black; and carious teeth; varicose veins under the tongue; hemorrhages, frequently mortal, from under the skin, without any apparent wound; as also from the lips, stomach, liver, lungs, spleen, pancreas, nose, etc.; ulcers of the worst kind upon every part of the body, chiefly the legs, yielding to no remedies, of a gangrenous disposition, and most fetid smell; scabies; crusts; a dry and gentle leprosy; violent, piercing, universal nocturnal pains; livid spots. 4. *Fevers of many kinds, hot, malignant, intermitting all manner of ways, vague, periodical, continued, occasioning an atrophy; vomitings; diarrhœa; dysenteries;* severe stranguries; faintings; and an oppression upon the breast, often suddenly mortal; a *dropsy; consumption; convulsion;* tremor; palsy; contraction of the tendons; black spots; vomiting and purging of blood; putrefaction of the liver, spleen, pancreas, and mesentery, [everything.]"

"He supposes the immediate cause of the scurvy to be a singular state of blood; in which one part of that fluid is too thick and viscid; while, at the same time, the other part is too thin or dissolved, saltish and acrid. Which latter, or its acrimony, is either of an acid or alkaline quality: a distinction here carefully to be remarked. Upon this hypothesis, he founds the following rules, viz: That part of the humor which is too thick, viscid, and stagnating, must be attenuated, rendered thinner, and put in motion; meanwhile, what is already too thin, is to be thickened, and the predominating acrimony corrected according to its different kind and species. Now, as a singular regard must be had at the same time to these so opposite intentions of cure, he thinks it *the masterpiece of art* to cure the scurvy, [and well he may.] And after observing that smart evacuations always exasperate, and often render it incurable, he lays down a process of cure adapted to the different stages and symptoms, as distributed in the four classes or sections. It is needless to give Boerhaave's prescriptions here, as almost all of them in his Materia Medica are taken out of Willis.

"He concludes the subject with observing, that, in order to a successful cure of this disease, it is principally required to investigate the peculiar predominating acrimony in the humors: and as this acrimony may be either saline and muriatic, acid and austere, alkaline and fetid, or rancid and oily; so it requires different and opposite cures; what is serviceable to one scorbutic patient, proving poisonous to another. The name of the distemper is not so much to be studied, *but each particular species of it*, according to the different kinds of acrimony above specified, as if it were a distinct disease."

It is very plain that this distinguished physician and master-mind held all diseases to be scorbutic, the choleras, dysenteries, intermittent and other fevers, consumption, convulsions, etc.

Nitzsch on the Scurvy at Wiburg—Communicated to Dr. Schulze, 1732—1734.—"It may be be proper, first, to observe, that the scurvy is here a common disease. But what drew particular attention to it this year, 1732, was the *uncommon number* of the afflicted, and of those who died, together with its *unusual duration*. It persisted in its ravages *from the beginning of the year until the month of August*, with such remarkable violence, that I was sent thither by express orders in the month of June. I observed *the appearances of the disease were not the same in all; but varied according to the different constitutions of the patients*. Those who were of a lax habit, labored under swelling of the legs, (rarely of the belly,) yielding easily to the impression of the finger, but often becoming harder upon the continuance of the malady. The hypochondria for the most part were tumid, the flexor tendons of the leg always contracted, with livid spots on the legs, knees, thighs, and back. Those spots, particularly on the legs and if the patient was full of blood, became often inflamed, and were attended with most acute pain, and quickness of the pulse. Now and then the white of the eye [was] altogether bloody, and sometimes the eyelids were greatly swelled, being distended with effused stagnating blood. In some the spots were pretty large [purpura],

especially upon the thighs and back; in others they *resembled only flea-bites* [petechiæ], and were accompanied with swelling of the legs, universal lassitude, swelled, bleeding, and putrid gums; as also a pale wan countenance. Several were distressed with a great *difficulty of breathing, cough and spitting*, giddiness, and *faintings*, most commonly when in an erect posture; *the latter often proved fatal* to those who had been long afflicted. The *appetite* from the beginning was somewhat *impaired*, often leaving the patient upon his being affected with flatulencies and nausea, but returning upon the accession of a purging. The *feet, scrotum and belly* were sometimes greatly distended with a transparent *watery swelling*, and the *skin inflamed*. The gums having become a mass of spongy flesh, discharged, upon squeezing, a thin fetid matter; and the *salivary glands* were sometimes so stuffed, as to acquire the *hardness of a scirrhus*, which could not be resolved by any other means than by a natural and spontaneous salivation. Persons of a thin habit were afflicted with symptoms different from those who were corpulent. They were every day more and more emaciated, and racked with violent shooting pains on the bones of the legs *accompanied with a fever*. The anguish did not fix in one place, but by shifting produced *gouty pains, colics, the spasmodic asthma, headaches, toothaches, and contractions*. By volatile medicines having been improperly given, the *bowels, the liver and spleen, became hard;* upon which ensued *either a dropsy, consumption or flux, which constantly proved fatal*. The gums were swelled and hard, painful to the touch, and often overrun with a *cancerous ulceration*.

"In order to put a stop to this dreadful calamity, it was necessary that the remedies should be suited to the habit and constitution of the patient. * * * Besides the use of a decoction of pine tops, I found it necessary, every second or third day, to give a pretty smart purge: which had so remarkable good effects, that though many were bloated, yet none became dropsical. Bleeding with caution near the decline of the disease, when the pulse was strong, evidently assisted in the cure. I can solemnly affirm it was followed with an increase of strength, a perfect relaxation of the ten-

dons, which had before been attempted to no purpose by warm steams and baths, and a more speedy recovery."

The great and most severe pestilential period of the last century, that culminated in 1740 to '44, actually commenced about ten years before. The elemental disturbances and non-average seasons, seem to have set in as early as 1730. In 1732, the plague prevailed at Tripoli, Sidon, and Damascus; and the American plague at Charleston. During that and the next year, the influenza spread all over the world. "This epidemic seems to have been the precursor of the most pestilential period of this century." (*Webster*, vol. i. p. 232.) This accounts for the extraordinary ravages of scurvy at Wiburg, in 1732, and why it persisted until August.

A treatise by this author was published in 1747, on scurvy as it appeared in the Russian armies. The observations were made, however, during this same prolonged pestilential period, and nothing of *scientific* interest seems to be added. He censures those who class all diseases as scurvy, as well as those who undertake to circumscribe it—makes two grand divisions into *cold* or chronic, and *hot* or febrile scurvy—holds that a concurrence of causes produce it, anything that depresses—that it is limited to no latitude or climate, raging as fiercely at Asoph as at St. Petersburgh—that the *hot days* and *cold nights* of low, inundated, southern localities, were greatly productive of it—and has nothing new in the treatment, but depends on the antiscorbutic course mainly. He undertakes, but fails, to settle the limits of the various kinds or species, like all others who had attempted to make a system of it, which he says is very difficult. Pine tops, juniper berries, sorrel, neutral salts, baths, ointments, oils, poultices, tapping and scarifications, alkalies, acids, diuretics as nitre, tonics, testaceous powders, etc., etc., with spruce-beer, horse radish, and other antiscorbutics, and proper diet, constituted his course of treatment.

Bachstrom on Scurvy, 1734.—"From want of proper attention to the history of the scurvy, its causes have been generally, though wrongfully, supposed to be, cold in northern climates, sea air, the use of salt meats, etc., whereas *this evil*

is solely owing to a total abstinence from fresh vegetable food, and greens; which is alone the true *primary cause* of the disease. And where persons, either through neglect or from necessity, refrain for a considerable time from eating the fresh fruits of the earth, and greens, *no age, no climate or soil, is exempted from its attack.* Other secondary causes may likewise concur: but recent vegetables are found alone effectual to preserve the body from this malady; and most speedily to cure it, even in a few days, when the case is not rendered desperate by the patient's being *dropsical* and *consumptive.* * * * From all which the author concludes, that as abstinence from recent vegetables is altogether and solely the cause of the distemper, so these alone are its effectual remedies. * * In examining the mineral and fossil remedies, which have been so much recommended for the scurvy, he observes of nitre, that as it is a copious ingredient in most plants, * * * it may perhaps be serviceable; but otherwise, all those classes are to be avoided. He condemns the use of steel, mercury, and alum; as likewise sulphureous and vitriolic medicines, especially the strong acid of vitriol, which some account a specific in the scurvy, [how the doctors will differ.]"

Sinopeus on the Scurvy at Cronstadt, 1734.—"The learned author, in his very elegant and accurate account of the diseases which prevailed at Cronstadt, from the year 1730 to the end of 1733, observes, that when he first came there, A. D. 1730, true pleurisies, peripneumonies, etc. reigned. Those fevers ceased in the spring; and an unusually dry and warm summer succeeding, there were few acute diseases, and even old habitual complaints became more tolerable. A dry and cold autumn, with a seasonable snowy winter, gave rise to but very few acute diseases, till about the beginning of February, when a catarrhal fever commenced. The weather proved then very unsettled; the spring was cold and moist; the summer much the same, with little heat. This catarrhal fever raged about twenty days. Upon its remission, *pleurisies, peripneumonies, rheumatisms, etc.*, took place; and an *intermitting fever*, which continued the whole spring; as *also the scurvy*, [all based on the scorbutic diathesis, the catarrh also;

if not, on what? on health? preposterous.] This last made its appearance in the month of March, 1731, seizing at first only a few; but in a short time the number of scorbutic patients was equal to those in fevers; and afterwards exceeded them. It began with a bloated, sallow complexion, livid spots, etc., and was accompanied with such symptoms as have been before mentioned. In the months of April and May it raged with uncommon violence, and continued almost till the middle of July; when it was abated by the heat of the season; [or changed its type.] *Some patients became dropsical, others consumptive.* Some labored under *the most violent colics, with obstinate constipation* of the belly; others were seized with a *mortification of the mouth and gums*, scorbutic *tumors, etc.* Soft, *livid swellings* arose upon the body: they were judged to be full of matter; but, upon opening them, nothing was discharged but a black, dissolved blood: the ulcer was surrounded by a fungous rotten flesh, whose basis seemed very deep, and bled upon the gentlest touch. A very accurate description of scorbutic tumors and ulcers.

"Although the scurvy was a distemper bad enough of itself, it was, however, often rendered worse by being complicated [as the author supposed] with other intercurrent diseases, viz.: *fevers*, and *rheumatisms*, but *especially the intermitting fever. All* who recovered from this last, *became scorbutic.* There was *scarce any person either in the hospital or town, who labored under even a chronic disease, who was not more or less affected by the scurvy*, [how palpably scurvy is the base of all forms of disease.] Hence all diseases whatever became more troublesome and obstinate this spring.

"The scurvy having entirely [as supposed] ceased in July, a few mild fevers took place the rest of the summer and autumn.

"In the beginning of the year 1732, a gentle *vernal fever* prevailed; soon after, the *bastard pleurisy* was more frequent; and, *lastly, the scurvy.* All those diseases entirely ceased upon the appearance of a warm and dry summer. This continued but for a month, when the weather changed to rain and cold; which induced *a universal distemper, viz.: a catarrh, with cough, etc. It spread itself over all the countries about, raged*

much at Petersburg, and affected even those who were at sea. The vernal scurvy, 1733, was milder than any of the former; but, nevertheless, contrary to custom, *continued during the whole summer and autumn,* the seasons proving wet and uncomfortable. (He has one singular observation, That the scabies and purpura prevailed at the same time with the scurvy.) The remedies used, were, essences and conserves of the antiscorbutic plants, hot aromatics, bitters, etc."

This is an admirable account, and who does not see that all the diseases of the different seasons were nothing but varied forms of one disease, instead of "complications" of numerous essences with that of scurvy? The great pestilential period of 1740 is seen to be opening, by the aggravation and persistency of scurvy.

KRAMER ON SCURVY IN THE HUNGARIAN TROOPS, 1737.—"The calamity which afflicts the Imperial troops, is not that species of scurvy described by Eugalenus and others. It differs from it in three particulars.

"1. It is not infectious. No officers are seized with it; and only the regiments of such nations as use too gross diet. 2. It is not a primary, but a secondary disease. It attacks only those who have recovered from fevers, and especially such as have had frequent relapses. 3. It is not attended with the many symptoms described by those authors. *The appearances in all are constantly uniform* [who believes so?], *and as follow.*

"In the first stage the gums are swelled; they are apt to bleed, and stained with livid spots. Upon which ensue great putrefaction, a most offensive stench from the mouth, and a falling out of the teeth.

"In the second stage or degree of the malady, there is for the most part a contraction of the joint of the knee, so that the patient cannot extend his leg. Violent shooting pains are felt in this joint, as likewise often in the other joints of the body. The contracted knees are also swelled, with incredible pain and rigor of the tendons; and the skin is covered with bluish stains interspersed with small miliary eruptions. In one night's time the eyes, and even other parts of the body,

become covered with large livid spots, [in every case?] as if the patient had received several bruises. These spots are altogether without pain. The muscles of the legs, thighs, and even cheeks, become greatly swelled, and hard, nay altogether indurated. But those swellings, as also the large stains, never suppurate. The pulse is quick, small, and hard; the urine red, with a thick unequal sediment.

"If the patient still continues to use an improper diet, as is the case of many of our common soldiers from want of necessaries in Hungary, the malady advances to its third stage. The gums become prodigiously swelled, together with the cheeks. A mortification, or caries of the jaw, ensues; both which prove incurable. The difficulty of breathing is so great, that the patients *not only faint away* upon the slightest motion of the body; but frequently, when walking about, *drop down suddenly dead.* They generally complain excessively of this difficulty of breathing a few days before death, though they have neither cough nor spitting. *All the species of dropsies and watery swellings on the body, accompany the advanced stages of this calamity*; [uniformly, every case?] in so much that, by lying with the head in a declining posture, the face in half an hour becomes so swelled, that the person cannot open his eyes. Such swellings often disappear and return. They are subject to *profuse bleedings at the nose*, [every case?] and, in these deplorable circumstances, *to a purging with frequent discharges of blood by stool* [cholera and dysentery], which often closes the scene, * * * In the beginning of the disease, the appetite and thirst are natural; but towards the close of the malady, the appetite fails and the thirst is increased. Of the many other symptoms described in this disease by authors, none else occur but those alone which have been mentioned. [Kramer tried hard but failed to make scurvy appear a uniform disease.] * * * If the patient survives until summer, he either perfectly recovers, or remains incurably contracted.

"The causes of this evil are, *frequent relapses after fevers*, [and what causes the fevers?] which have been epidemic in the country; the moist and marshy soil; but especially gross and viscid diet, viz.: flesh and the grosser farines. * * *

I come now to what has been attempted, both by myself and others, towards the cure: and must first observe, that four hundred of the troops near Belgrade having taken mercury without my advice, the dreadful consequence was, they all died in a salivation! Shunning, therefore, that fatal drug, I generally at first gave a vomit, in order to cleanse the stomach, and so to procure a more certain entrance of the specific antiscorbutics, with their full virtues, into the blood. I then administered, in every form that could be thought of, or that has been recommended by authors, the most approved antiscorbutic remedies; but, alas, all was in vain! * * * After having met with such melancholy disappointments, in the trial of what has been recommended by others, and whatever I could think of myself; reflecting that tedious fevers had generally preceded, and that *a slow fever still accompanied the disease*, I had recourse to the cort. peruv. given in the form either of electuary or infusion. By this, in a few days, I formerly cured sixty soldiers in the regiment of Bagnan, who were in the second stage of the disease. It is now two years since: but at the same time they had a proper diet, and such food as cannot at this time be procured. I have already tried mustard seed, which is said to have saved the besieged garrison of Rochelle, when overrun with this disease; but here, like all other remedies, it is of no efficacy. * * * I therefore humbly request, that if any of you, gentlemen, be possessed of an arcanum, or a remedy that may overcome this Herculean disease, you will favor me with it; as also your best advice. Perhaps some of you may have the knowledge of the fixed mercury boasted of by Dolæus and Helmont, which will cure the scurvy without the aid of such a proper diet as cannot at this time be procured for the wretched sufferers in Hungary."

The Faculty's Answer.—"We have received your very accurate account of the scurvy, which commits such dreadful havock among the Imperial troops during the spring in Hungary; and it is ordered directly to be printed. After having had all circumstances duly weighed by the most experienced of our faculty, the first rule we prescribe, is great attention to the nonnaturals, [in other words hygiene.] Without this,

the most excellent medicines may fail; but when a proper regard is had to these, simple remedies will do great things. As the sources of this calamity seem to be impure air, and an unwholesome marshy soil (evils not easily remedied), the troops must often shift their quarters, and remove into a better air. When in unhealthful stations, they are, by way of prevention, to use the smoke of tobacco, juniper, etc. They should have always dry straw to lay upon the ground; and as wholesome food as can be procured for them.

"As to the cure (after noting with infamy those who have recommended a mercurial salivation in this disease, as more properly destroyers of the human race than physicians) we would advise a gentle vomit of ipecacuanha to be premised; and afterwards the approved antiscorbutics of the vegetable kind to be given, viz., scurvy-grass, brook-lime, cresses, fumitory, St. John's wort, marsh-trefoil, etc. The juice, extract, tincture, decoction, etc., of these, may be administered either in whey or broth. As you have none of those plants, we have sent you their seeds to be sown in the country; and until such time as they grow up, have supplied you with a quantity of the dried herbs, and of their inspissated juices."

The reader will bear in mind the fact of the pestilential period of this date—it is seen now to be drawing towards its culmination.

Hoffman on the Scurvy, 1739.—"In what he terms a complete history of this disease, (in an enumeration of the symptoms, classed in Willis's manner according to the different parts of the body affected,) among other things he observes, the scorbutic colic is distinguished from all others, by the pain being so shooting, acute, and intolerable. The belly is not, as in other colics, distended with wind: but the navel is drawn inwards, so as to form a cavity sufficient to hold one's fist. It is very obstinate, yielding neither to medicines nor fomentations; and has often this peculiar to it, that it terminates in a palsy, [lead scorbutus?] After a preceding scorbutic asthma, the patient is very apt to fall into a dropsy, especially if violent purgatives have been used. The scorbutic toothache is distinguished from all others, by its suddenly

attacking, and as suddenly leaving the patient. Scorbutic headaches are most troublesome in the evening; but upon a sweat breaking out, they leave the patient. Some in this disease keep awake for many weeks without being sensibly weakened by it. Scorbutic ulcers appear in the following manner. First, the part is painful; then the cuticle separates in like manner as if boiling water had been poured upon it; a watery humor oozes forth, and the part becomes extremely painful; but true purulent matter is scarce ever observed to flow from the ulcer. At other times, scorbutic ulcers continue deep, and quite dry, without affording any discharge; and these are very apt to gangrene.

"He thinks the best cure for the scurvy is the mineral waters [good]. They are sufficient to effect it, as long experience had convinced him, when aided by a proper diet and regimen [if curable]. For this purpose, he recommends the Caroline and Selter's waters. Where the conveniency of mineral waters is wanting, he advises drinking simple, pure, and light water of any sort; which will often remove the disease. But it is still better if the water partakes of steel principles, such as the Lauchstadt spring, two miles from Halb. It is to be both outwardly and inwardly used. He likewise recommends a milk-diet, especially asses' milk. When a scorbutic habit of body is complicated with obtructed viscera, cachexies, the hypochondriac disease, or the purpura chronica; then the cure succeeds better, if the milk be taken mixed with the mineral water. He observes the great detriment of mercury in this distemper; and mentions various antiscorbutics, bitters, emollients, etc., that may be proper."

The scorbutic source of disease and the supposed old source descended from the ancients are here recognized, in this distinguished writer's causes of disease.

Berkeley, Lord Bishop of Cloyne, on Scurvy, 1744.—"The scurvy may be cured (if the author may judge by what he has experienced) by the sole, regular, constant, and copious use of tar-water."

Mr. Walter, Compiler of Lord Anson's Papers on Scurvy, 1748—*A Voyage round the World in* 1740, '41, '42, '43, '44.—"This disease, so frequently attending all long voyages, and so particularly destructive to us, is surely the most singular and unaccountable of any that affects the human body. Its symptoms are inconstant and innumerable, and its progress and effects extremely irregular: for scarcely any two persons have the same complaints; and where there hath been found some conformity in the symptoms, the order of their appearance has been totally different, [mark this, reader.] However, though it frequently puts on the form of many other diseases, [rather, all supposed 'other diseases' are but forms of scurvy; which explains the whole riddle,] and is therefore not to be described by any exclusive and infallible criterions; yet there are some symptoms which are more general than the rest, and occurring the oftenest, deserve a more particular enumeration. These common appearances are, large discolored spots dispersed over the whole surface of the body; swelled legs; putrid gums; and above all, an extraordinary lassitude of the whole body, especially after any exercise, however inconsiderable: and this lassitude at last degenerates into a proneness to swoon, on the least exertion of strength, or even on the least motion. This disease is likewise usually attended with a strange dejection of spirits; and with shiverings, tremblings, and a disposition to be seized with the most dreadful terrors on the slightest accident. Indeed it was most remarkable, in all our reiterated experience of this malady, that whatever discouraged our people, or at any time damped their hopes, never failed to add new vigor to the distemper: for it usually killed those who were in the last stages of it, and confined those to their hammocks who were before capable of some kind of duty. So that it seemed, as if alacrity of mind, and sanguine thoughts, were no contemptible preservatives from its fatal malignity."

We have before spoken of mental depression as a powerful means of impairing nutrition. And of miracles being wrought by hope, which stimulates nutrition. There is but one law of healing.

"But it is not easy to complete the long roll of the various concomitants of this disease. For it often produced *putrid fevers, pleurisies, the jaundice, and violent rheumatic pains,* [in other words, it appeared in these forms in different constitutions.] And sometimes it occasioned an obstinate costiveness; which was generally attended with a difficulty of breathing; and this was esteemed the most deadly of all the scorbutic symptoms, [water in the chest.] At other times the whole body, but more especially the legs, were subject to ulcers of the worst kind, attended with *rotten bones,* and such a luxuriancy of fungous flesh as yielded to no remedy. But a most extraordinary circumstance, and what would be scarcely credible upon any single evidence, is, that the scars of wounds which had been for many years healed, were forced open again by this virulent distemper."

This recrudescence is an invariable attendant on hydrophobia; the wound from the bite always re-opens, showing hydrophobia in human subjects to be scorbutus; as the disease in dogs undoubtedly is.

"Of this there was a remarkable instance in one of the invalids on board the Centurion, who had been wounded above fifty years before at the battle of the Boyne: for though he was cured soon after, and had continued well for a great number of years past; yet, on his being attacked by the scurvy, his wounds, in the progress of his disease, broke out afresh, and appeared as if they never had been healed. Nay, what is still more astonishing, *the callus of a broken bone,* which had been completely formed for a long time, *was found to be hereby dissolved; and the fracture seemed as if it had never been consolidated.* Indeed, the effects of this disease were almost in every instance wonderful. For many of our people, though confined to their hammocks, appeared to have no inconsiderable share of health; for they ate and drank heartily, were cheerful, and talked with much seeming vigor, and with a loud, strong tone of voice; and yet on their being the least moved, though it was only from one part of the ship to the other, and that in their hammocks, they *have immediately expired.* And others, who have confided in their seeming strength, and have resolved to get out of their hammocks,

have *died before they could well reach the deck.* And it was no uncommon thing for those who could do some kind of duty, and walk the deck, to *drop down dead in an instant,* on any endeavors to act with their utmost vigor; many of our people having perished in this manner, during the course of this voyage.

"Upon arriving at the island of Juan Fernandes, one hundred and sixty-seven sick persons were put on shore, besides at least *a dozen who died in the boats,* on their being exposed to the fresh air. The extreme weakness of the sick may be collected from the numbers who died after they got on shore: for it had generally been found, that the land, and the refreshments it produces, very soon recover most stages of the sea-scurvy; yet *it was near twenty days after their landing, before the mortality was tolerably ceased:* and for the first ten or twelve days, they buried rarely less than six each day; and many of those who survived, recovered by very slow and insensible degrees. * * * The havoc which this dreadful calamity made in those ships, was truly surprising. The Centurion, from her leaving England, when at this island, had buried two hundred and ninety-two men, and had but two hundred and fourteen remaining of her compliment. The Gloucester, out of a smaller compliment, buried the same number, and had only eighty-two alive. This dreadful mortality had fallen severer on the invalids and marines than on the sailors: for on board the Centurion, out of fifty invalids, and seventy-nine marines, there remained only four invalids, including officers, and eleven marines; and on board the Gloucester, every invalid died, and only two marines escaped out of forty-eight.

"In less, however, than seven weeks after leaving the coast of Mexico, having continued in perfect health for a considerable time before, this fatal disease broke out again amongst them. * * * We had a considerable stock of fresh provisions on board, being the hogs and fowls taken at Paita. We besides, almost daily, caught great abundance of bonito's, dolphins and albicores: and the *unsettled season having proved extremely rainy* [note the constitution of the season], supplied us with plenty of water; so that each man had five pints a-

day during the passage. But notwithstanding this plenty of water, and fresh provisions [not vegetables] distributed among the sick, the whole crew often fed upon fish; yet neither were the sick hereby relieved, nor the progress and advancement of the disease retarded. * * * We kept all our ports open, and took uncommon pains in sweetening and cleansing the ship; yet neither the progress, nor the virulence of the disease were thereby sensibly abated." * * *

It must be borne in mind by the reader, that this was a pestilential period, the world over, like the extraordinary years that produced the Irish famine. Every plant, animal, fish, and human being was more or less scorbutic.

"Upon their arrival at Tinian, they soon began to feel the salutary influence of the land: for though they had buried in two days before twenty-one men, yet they did not lose above ten more from the day after they were landed; and reaped so much benefit from the fruits of the island, particularly those of the acid kind, that in a week's time there were but few of them who were not so far recovered as to be able to move about without help."

Ellis on Scurvy, 1748—*A Voyage to Hudson's Bay in the Years* 1746 *and* 1747, *for Discovering a North-West Passage*—"The bringing two casks of brandy from York Fort for our Christmas cheer, was attended with fatal consequences. The people had been healthy enough before this season of mirth came; but indulging themselves too freely, they were soon invaded by the scurvy, the constant attendant on the use of spirituous liquors [topers are always scorbutic]. It is a melancholy, but withal a necessary task, to describe the progress of this foul and fatal distemper. Our men, when first seized with it, began to droop, to grow heavy, listless, and at length indolent, to the last degree; a tightness in the chest, pains in the breast, and a great difficulty in breathing followed; then ensued livid spots upon the thighs, swelled legs, contraction of the limbs, putrid gums, teeth loose, a coagulation of blood upon and near the back-bone, with countenances bloated and sallow; these symptoms continually

increasing, till at length *death carried them off, either by a flux or a dropsy.* Those medicines, which in other countries are generally used with good effects, proved entirely ineffectual here. For unctions and fomentations, when applied to contracted limbs, afforded no relief: fresh provisions, indeed, when we could get them, did somewhat. But the only powerful and prevailing medicine was tar-water [a good eliminant]; and the steady use of this saved many, even after the disease was far advanced, when all other medicines lost their efficacy, and were tried to no purpose. As far as we could observe, this salutary drink operated no other way than by urine."

Mead on Scurvy, 1749.—"The learned author very justly describes the most essential symptoms of the scurvy. He imagines the air even more than any other agent concerned in bringing on this calamity. * * * Other causes, as bad diet, etc., concur to breed the disease. * * * Wine-vinegar is a proper preservative. He observes, that the disease is cured by vegetables, and land-air; and that hotter and colder vegetables, when mixed, qualify each other, especially as the acid fruits in Lord Anson's voyage were found of most benefit. Milk of all sorts, and its whey, when it can be had, are proper antiscorbutic food and physic."

Russel on Scurvy, 1750.—Nothing new or particularly worthy of notice in this author. He regards table salt as preservative against scurvy, not as causing it.

Huxham on Scurvy, 1750.—"He thinks the scurvy at sea owing to bad provisions, bad water, bad beer, etc. The pernicious effects of which will be considerably augmented by living in a moist, salt atmosphere, and breathing the foul air betwixt decks. The most effectual way of correcting this alkalescent acrimony in the blood, is by vegetables and mineral acids: and for that purpose he particularly recommends cider; of which each sailor should have at least a pint a-day.

GMELIN ON SCURVY, 1736—1750—*A Journal of Voyages made by order of the Court of Russia into Ramavatzin, by the Coast of Siberia.*—"On the 18th of August, 1736, the ship entered the river Karaulach, in the latitude of 71°. The first care of the commanding officer was to build a habitation for their winter quarters. * * * On the 12th of September they took possession of their winter quarters, all of them being then in perfect health except one soldier. Towards the end of October the cold became very severe, and the scurvy made its appearance. The sun was seen no more after the 5th of November for two months. On the 18th of December the lieutenant, a man of a strong and robust constitution, and another person, died, of the scurvy."

How is this, "a strong and robust" man, the *first* to die of scurvy? The argument often advanced against our theory of cholera is, the robust are attacked and die. The explanation is this; the plump and fat are mistaken, often, for robust, when very scorbutic.

"With regard to the case of the lieutenant, it is said, that towards the end of the disease, it was remarked, *he had a violent fever, an asthma, an insensibility over the whole body* [paralysis of sensation], and an hiccough, under which he expired [five diseases! enough to kill a captain]. Upon opening the body, the right side was observed marked all over with bluish scorbutic spots. The penis was erect, and discharged blood into the bladder; in the cavity of which was found a quantity of coagulated blood and other impurities. The right lobe of the lungs was covered with a viscid humor; the throat and aspera arteria were inflamed; the heart and the great artery were distended with a blackish blood; and the kidneys as if they had been mortified: the stomach nevertheless was discovered sound, and without defect. * * *

"Of all the company, *eight persons only had the good fortune to escape with life.* * * * They were kept in perpetual motion and exercise; being constantly employed in cutting down wood, and in warming the chambers, in attending and assisting the distressed."

ADDINGTON ON SCURVY, 1753.—"The description of the disease is borrowed from Cockburn, Boerhaave, Hoffman, Eugalenus, Lord Anson's voyage, etc. The cure proposed at sea, is to be begun, if there be any mark of fullness, by bloodletting. * * * In order to lessen the quantity of redundant blood still more, the patient is afterwards to be put under a course of gentle and daily purgation, with sea-water. * * The patient (with some exceptions) is to be bathed every morning in the sea just before he drinks the water. Sea-water is also used externally, where there are ulcers on the gums and legs, or carious bones. * * * In scorbutic fluxes, mortifications, and hemorrhages, the salt-water is to be omitted. The most probable way to remove the last symptom, is, to bleed the patient as often and as much as his strength and age will permit; [!] to open the belly, if costive, by clysters; and to oblige him to live entirely on the unfermented farines, [alas, alas!] and to drink freely of water softened with gum arabic and strongly acidulated with spirit of sea-salt."

BISSET ON SCURVY, 1755.—"Chap. 1. *Of the progress and different species of the scurvy.* [For a description of the two first stages, see our quotation in the Appendix to Essay on Cholera.] Being arrived at its third and last stage, some other symptoms and symptomatic diseases frequently arise, which with the former symptoms swiftly increase, and soon and infallibly end in death; if the patient has not the benefit of a proper regimen, ripe fruits, or green vegetables. The forms the scurvy now assumes are divided into five classes. *The first* is, when an anasarca is the most prevalent symptom. *In the second* species, the anasarca is almost wholly confined to the legs and feet. * * * *In the third* the legs are swelled and hard, chiefly at the calves, and sometimes they are greatly indurated without much swelling. The muscles of the thighs are often rigid and painful, and the benders of the legs sometimes contracted, with one or both knees rigid, having a hard discolored swelling. * * * *The fourth* species is distinguished by a dry emaciated habit and legs, excruciating bone-aches, frequently most violent in the middle and forepart of the legs. * * * It has a great affinity to a species of cachexy induced by in-

termittents in the West Indies. *The fifth* species, the most malignant and fatal, is commonly *preceded by a continued or remitting fever*, and sometimes the second and third species degenerate into it, especially if supervened by any degree or species of fever. * * * The inside of the mouth is ulcerated, and sometimes there is a caries of the maxillary bones. It is attended sometimes with a *slow continued, remitting or irregular intermitting fever* and *thirst.* Its progress is swift, [is it yellow fever?] It is sometimes formed by a complication of the scurvy with the cachexy from an intermittent; and it is generally this species which succeeds fevers at sea. Two cases occurred wherein the diuresis was much impaired, with thick turbid urine, and sometimes a spurious ischuria; in both the disease quickly increased with profuse hemorrhages at times from the nose. Such hemorrhages however do not often occur, a cough scarce ever, nor any considerable dyspnœa in the scurvies in the West Indies; nor did the author ever see *one case* of luxuriant spongy flesh arising from the gums.

"Persons under a manifest [slow] scurvy are not *invaded with the bilious fever in the West Indies; yet this fever often attacks them when highly predisposed to the scurvy, as also when recovering from it,* in both cases proving very fatal.

"Chap. 2. *Of the external and internal causes of the scurvy, &c.* The predisposing cause to this disease in the West Indies is, according to the author's hypothesis, *the intense diurnal heat,* when the sun is in or near the zenith; joined with a *constitution not seasoned to the torrid zone; which weakens the digestive and assimilating powers of the body.* * * * * * * * * * *

"*Chap.* 3. *Of the prevention of the scurvy.* * * * *

"*Chap.* 4. *Of the method of curing the scurvy.* * * *

"Having before constituted five different species of scurvy; *in the treatment of the first we must chiefly regard the dropsy.* * * * * The second species is indeed for the most part soon cured by a proper vegetable diet only. The third species requires a still greater proportion of attenuants, deobstruents, and demulcents, together with some emollients: consequently sweet oranges will be the most suitable remedy for both external and internal use. The cure of the fourth species is to

be attempted by attenuants, demulcents, emollients, sudorifics, and bathing in warm water; using afterwards the cold bath, exercise, and other corroborants. In the fifth species, [yellow and other fevers,] the best internal remedies are juice of limes or lemons shad-docks, pomegranates, cashew apples, and all subacid subastringent fruits, verjuice, spirit of vitriol, Peruvian bark [quinine], a decoction or extract of the twigs of green guaiac, lime-water, tar-water, a decoction of sharp-pointed dock with orange-peel acidulated with acacia, and sweetened with molasses."

Bona on Scurvy, 1761.—"He observes in his dedication, that no Italian author had before him treated expressly on the scurvy, so far as he knew. * * * This large volume, in which the author tells us, that he has given a complete history of the scurvy, contains few practical observations, and those mostly communicated to him by his friends.

"The first is from Professor Varga, who in the year 1752 observed many country people, living about ten miles from Verona, in a healthy climate under the Alps, afflicted with the scurvy. It proceeded from a want of corn, or a sort of famine, [abridged nourishment.] * * * A second observation is communicated by the same professor. A healthy old man, being confined to his bed for five months by a fracture of the head of the thigh bone, was, notwithstanding his having a very wholesome diet, seized with a scurvy. * * * A *fever and flux* carried off the patient in the tenth month of his confinement. The third observation was made by a physician, who for many years had the care of lunatic patients in the hospital of St. Ursula. The greater part of those lunatics, who had been long confined in that hospital, were at length attacked with the scurvy. [Insanity is but a form of scurvy.]"

Monchy on Scurvy—*In West India Voyages*, 1761.—"He says, *the putrid fever, the malignant fever, and the scurvy*, are the most usual diseases in these voyages. Upon the subject of the latter disease, he offers nothing new, having (as it would appear) few opportunities of seeing scorbutic patients."

Brocklesby on Scurvy, 1764.—This author's observations were made during the pestilential period of 1758 to '63. He has nothing new or peculiar. Relies on decoctions of the bark soured with elixir vitriol, above all other remedies.

Macbride on Scurvy, 1764.—There is nothing new or important in this author. He advises malt in the cure of scurvy and we see by later authors that Macbride imputes the *cause* of scurvy to a want of carbon in the blood, but Lind does not mention it.

Monroe on Scurvy, 1764.—This author's observations were made also in the same pestilential period with those of the author last mentioned, in the British military hospitals in Germany. He has nothing new.

Rouppe on Scurvy, 1764.—"To the other causes usually assigned for the scurvy, he adds drinking to excess of spirituous liquors; and chewing or smoking tobacco: both which impede the digestion of the aliment [good reason]. But chiefly he ascribes the disease to a neglect of bodily exercise or a sedentary life. * * * He relates that a number of soldiers and poor people in Landau had lately been seized with an itch or scabby eruption on the skin [itch is a form of scurvy], different from the true scurvy. It was occasioned by their eating the salted flesh meats and old cheese, which during the late war had been laid up in the stores of that garrison. He thinks their eating greens at the same time, was the means [doubtless] of preventing their having the true scurvy.

"Among other symptoms of this disease, he observes, that the patients are from the beginning melancholy or low spirited, and apt to be struck with terror upon the slightest accident. * * * When the disease is farther advanced, they often lose all hopes of a recovery, and the most bold, intrepid fellows, when in health, are then apt to be *constantly melted down in tears*. Lastly, as if the mind had grown callous by a long continuance of affliction, they become insensible of injuries, and weeping like children patiently bear their

affliction, and the affronts put upon them by their officers. * * * *He has seen some who were slightly scorbutic attacked with a fever*, but never any who labored under a confirmed scurvy [the forms seldom change]. *The dropsy* and a *mortification* are the last and deadly symptoms of the distemper. After a very accurate detail of the symptoms, the author proceeds to the remarks he made on the inspection of the blood and dissections of dead bodies. * * * [In all the stages the blood coagulated, and a greenish, buffy coat formed on the surface, though in the last stage the coagulation was less perfect.]

"In the first dead body mentioned to have been opened (which was of a person who died at the island Curacoa *of a yellow fever and scurvy*) [mark this] we find nothing remarkable, [the progress to death being swift, as Bisset has said, there were no extensive disorganizations.] * * * The second dissection was of a soldier, who, after having suffered uncommon distress from the scurvy, which gradually passing through its three different stages *terminated in a dropsy* [mark this], was at length suffocated by it. [There was a general disorganization of the viscera.] * * * A man who had been afflicted with the scurvy for a whole winter died at Naples. * * Above ten pounds of a turbid water having a disagreeable cadaverous stench was found in his belly. * * * In a man who died of *hunger and the scurvy*, the omentum was corrupted, the liver hard and enlarged, the gall-bladder full of a black, greenish bile, the mesentery spotted with black and red blotches [etc.], * * * In others, who had died of the scurvy, he found pretty much the same appearances. * * * From those dissections, his examination of the state of the blood, and a review of the symptoms of the disease, the author concludes against the opinion of there being a thinness or fusion of the blood and humors in this distemper, observing that this can only happen in the last stage, being rather the effect than the cause of the scurvy. * * * The cure of the scurvy is to be performed, 1, by a proper diet, viz.: of unsalted flesh meat, and greens. 2, by having warm clothing. 3, by exercises adapted to the patient's strength; and lastly, by proper remedies to remove

the most urgent symptoms. * * * He concludes with several remarkable instances of the efficacy of the bark in this disease and in the eure of ulcers."

The observations of this author were made during the pestilential period of 1759 to 1762.

Poissonnier on Scurvy, 1767.—"This ingenious performance, after having met with the approbation of the academy of sciences at Paris, was presented to the King of France by the author in person. He divides the scurvy into three stages: in the 1st, he allows the patient may sometims lose a little blood, but with more confidence he recommends purges of tamarinds and eream of tartar, or of manna joined with bark and rhubarb. * * *. Recourse must be had to the proper antiscorbutic medicines, viz., vegetables abounding with a volatile spirit, the juices of fruits, fermented liquors, etc. In the second stage, all volatile, spirituous, and acrid medicines are to be laid aside, and in place of them the saponaceous juices of plants and fruits are to be administered. A drachm of cream of tartar, with an ounce of coarse sugar and four grains of the resin of guaiac well mixed together, may be taken every day, and is very proper in this stage, which will admit only of very gentle physic. In the 3d period or stage of the disease, bleeding, blistering, as also purges, and all spirituous, hot and acrid antiscorbutic medieines, are highly prejudical. Clysters may be occasionally administered. But *the juice of China oranges is the most excellent remedy, and cider* for common drink is preferable to to all other fermented liquors."

Lange on Scurvy, 1768.—"This book was published at Copenhagen. The translator offers a modest defence of Eugalenus. He asserts that Eugalenus had treated the scurvy well, as *there are other symptoms equally demonstrative of the scurvy with the putrid gums and spots.* He gives several eases in proof of this opinion, which do not appear to be strictly scorbutic [in Lind's opinion]."

Hulme on Scurvy, 1768.—"The nyctalopia, * * is

mentioned as a symptom of the scurvy, * * * it is the sea diet, and not the air, which is the principal cause of the distemper. The cure of the scurvy at sea, is to be performed, after the administration of a gentle purge, if the patient be costive, by giving a drachm of the Peruvian bark with an ounce of the juice of lemons, three times a day, bathing at the same time the limbs, morning and evening, with vinegar. * * * The scorbutic asthma is to be removed by the juice of oranges or of lemons, by gentle purges, and by sweating the patients every night with the sudorific elixir, and the decoction of fir before mentioned."

The scorbutic asthma here spoken of, sometimes denominated suffocative asthma, is doubtless synonymous with hydrothorax, or dropsy of the pericardium of the present day. Nothing can exceed the terrific agony of the impending sense of suffocation of some of these cases. In the spring of 1855 many of these sort of cases occurred. Sudden death in a paroxysm is the usual termination. In Ranking's Abstract, June, 1848, p. 64, Dr. Kyber treats of Pericarditis Scorbutica and the results of paracentisis, as follows:

"*Pericarditis Scorbutica.*—This disease is endemic on the extreme north coasts of Europe from February to autumn, and is proportionate to scurvy in any given year. It appears to have been described by Cælius Aurelianus under the name of morbus cardiacus. The external signs of scurvy are not always visible. Most of the remedies for ordinary pericarditis are either inapplicable from the cachectic constitution of the patients, or if applied fail to accomplish any good purpose. Success attended paracentisis in four cases, but in the majority operated on the sac soon re-filled. The same disease has been described by Seedlitz of St. Petersburgh under the name of Hemorrhagia Pericarditis."—(*Ranking's Abstract, June*, 1848.)

We do not see how it is possible for the profession to get by, ignore, or subvert the accumulated testimony as to the scorbutic origin of disease.

"The prevention of the scurvy at sea is to be accomplished by ships carrying to sea the juice of oranges or lemons and sugar, which should be mixed with their common drink. For this purpose one ounce and a half of the juice of oranges or

lemons, and two ounces of sugar, should be daily allowed to each man in his majesty's navy."

Some thirty years afterwards this suggestion was acted on, and lemon-juice was introduced into the British Navy, through the efforts of Sir Gilbert Blane and others, and was straightway adopted the world over.

Jervey on Scurvy, 1769.—"After a short enumeration of the characteristic symptoms of the disease, what he chiefly considers is, how far a ship's provisions as causes of the scurvy might be corrected or changed at the most moderate expense, and likewise how methods already discovered or proposed for prevention of this disease may with more ease be put in execution." * *

There is nothing particularly new in this author, but the character of the work shows that a *practical* effort was beginning to be instituted for the *prevention* of scurvy at sea. Lind's Epitome of the old authors closes here. He mentions, however, ten or twelve more he found quoted in the authors epitomized, but whose works he had not been able to reach.

Although our readers may find some portions of the foregoing compendium dry in detail, yet historically it is worth its weight in gold. We think it better calculated to enable the vision to penetrate into the recondite nature of all disease, as annotated, than the same number of pages any where else to be found. We speak of our annotations, our philosophy, as the *key* that explains the mystery that has forever hung around scurvy and veiled primary pathology. Opening the view to the great and uniform causes of all pestilence—the clusters of blighting years, or pestilential periods—the mind is led to take a philosophic interest in the matter. There seems to be some chance under this method of growing wiser; of getting at the true origin of disease, for all forms of it are then set in motion, and are plainly seen to be the offspring of *impaired nutrition.*

SECTION III.

EPITOME OF AUTHORS ON SCURVY SINCE 1772.

MILMAN ON SCURVY, 1782.—This production consists of Lectures read to the College of Physicians in 1780. His inquiries were instituted to discover the causes of Capt. Cook's success in preserving his crews from scurvy, and to account for the symptoms.

This author comes to the conclusion that the reason why Capt. Cook's crews were so preserved from scurvy, was owing to the uncommon attention paid to wholesome victualling, cleanliness, and other principles of sea hygiene; and this is the generally received opinion. No doubt all these measures were greatly conducive to the health of his crews; but it must be remembered that Capt. Cook did not ride the storm of a world-wide pestilential period, as Lord Anson did. From the pestilential period of 1760, to that which closed the eighteenth century, there was no intense, prolonged, and universally blighting run of years, culminating in a world-wide pestilence. Had Capt. Cook's provisions been the products of 1740, or of 1847, his hygiene would not have so preserved his crews from scurvy. His voyages were made in from 1767 to 1771, 1772 to 1775, and in 1776 to 1779, periods though not exempt from partial disturbances of the elements, yet certainly exempt from anything like a world-wide blight of several years, from non-average seasons. In his first voyage he lost twenty-nine men, and in his second only one man, which was the marvel of the age. But, besides his outfits being furnished from the products of average seasons, and his uncommon care, it should be further understood that his second voyage, deemed so remarkable, was a circumnavigation wholly within the southern temperate latitudes, except the passage of the tropics in going and returning. The highest latitude reached was but 70° 10′, so that the exciting meteoric causes of disease were of the mildest character, nearly the whole time.

He maintains that the predisposing causes are, weakness,

indolence, fatigue, cold, moisture, sorrow, the hypochondriacal constitution, and the atrabilious habit—the exciting causes, indigestible diet, food containing very *little nourishment*, fear, and other debilitating affections of the mind. He considers the proximate cause to be a diminution of vital power, and to have its seat in the moving fibres.

Blane on Scurvy, 1785.—In this author's works, entitled "Observations on the Diseases of Seamen," published in 1785, occur many remarks on scurvy in treating of supposed other diseases, besides a special chapter in Part III., a Description and Treatment of the Diseases most frequently occurring in Fleets in hot Climates, viz.: Fevers, Fluxes, and Scurvy. From the incidental allusions, we derive something worthy of notice in his account of the extraordinary manifestation of scurvy in the fleet in the spring cruise of 1781, in the West Indies, when "the fleet contracted such a degree of scurvy, as had never before been known in the West Indies." Now, by reference to the extraordinary constitution of the seasons of the years 1780 and '81, given at page 122 of this volume, the reader will not be left in the dark any longer on this matter: nor the cause of its extraordinary prevalence during the spring of 1782, when, even in the month of June, he had of fevers 11, fluxes 20, scurvy 47, and all other complaints 37; and of those attacked even in August, of fevers 31, fluxes 46, scurvy 25, and all other complaints 25; and ditto in September, when "a much greater number was taken ill of scurvy, and of these a greater proportion died than in the two preceding months," when the fleet came to anchor in New York.

In his especial treatise, he thinks the subject has been in a manner exhausted, both theoretically and practically by Dr. Lind, and refers, with regard to the theoretical part, to the ingenious treatise of Dr. Milman—debility of fibre. The principal source a vitiated or scanty diet, and this promoted by cold, moisture, filth, sloth, and dejection of mind—thinks hard labor not a cause—that the principal difference in the symptoms in hot and and cold climates is that in the former the livid hardness of the legs more early ensues, and that the gums are sooner affected in the latter, and the difficulty of

breathing greater and more frequent. Fresh vegetables the most effectual antiscorbutics, and something in lemons and oranges that far surpasses every other remedy. The expressed juice to be bottled, with spirits added to preserve it—that if heat is used in making it into a rob, the virtues of it are impaired—impossible to say how the juice acts, as no sensible effect appears but a slight increase of the secretions. The juice the best dressing for ulcers. The *scorbutic habit*, meaning the scorbutic diathesis, differs in nothing from the scurvy but in degree—that persons labor under scurvy before it can be detected by any obvious symptom—that the chief mark is, ulcers refusing to heal; and another, extravasated blood under the skin after slight bruises. Effervescing draughts of acids and alkalies spoken of as useful.

Has observed the hard, livid swelling of the legs and contracted hams to almost wholly disappear on the occurrence of spontaneous diarrhœa. Which shows there is no pathognomonic symptom of scurvy; that if diarrhœa occurs before the legs swell, they will escape. Stagnation of the humors in the small vessels, he thinks the condition—that the action of medicines restores them—sympathy the medium of the general effect of remedies.

Has long thought scurvy was owing to *defect of nourishment*, rather than a vitiated state of it. Salt of itself not productive of it. He says, "Dr. Stark, who, by way of experiment reduced his diet to the least quantity he could subsist upon, was thereupon affected with symptoms of scurvy. I have also known some symptoms of it to arise in old people, in consequence of long abstinence, owing to the want of appetite." A powerful argument for us.

He thinks food acts in two ways, as supplying the elements for the growth and repair of the tissues, and as a stimulus to distend the intestines and blood-vessels—he argues this, to us a self-evident truth, at some length. This is our doctrine, but is the first instance in which we have met with it. He inclines to adopt the opinion that scurvy is contagious.

THOMPSON ON SCURVY, 1790.—It fell to this author's lot to see more distress and mortality arising from scurvy during

a long service in the British Navy, than from all other diseases and causes united. Of what he calls the sea epidemics, fever, flux and scurvy, by far the greatest mortality was from scurvy. His introduction is an appeal to arouse the sympathies in behalf of adopting some great mode of preventing scurvy at sea. He says the principal predisposing, or remote causes are, a state of body impaired by preceding illness, particularly *fevers;* cold and moisture; intermittents, and mercurials; foul air, which he thinks more generally produces malignant fevers; but the main predisposing cause he holds to be exposure to moisture combined with cold, and the want of fresh vegetables. As to the proximate cause, whether it consist in a changed state of the fluids, or a weakened state of the solids, he will not attempt to decide, but thinks it only necessary to look at the *diet* of seamen for an explanation of the predisposing, proximate and immediate causes of scurvy.

He views scurvy as rather a gradual subversion of the constitution than *a* disease. A very just remark. He treats at length on the means of prevention, and has many good suggestions on diet; thinks acid fruits of all kinds, particularly lemons, limes, oranges are specifics used properly and in sufficient quantity. Nutritives of all kinds, and tonic, stimulant, diuretic and sudorific medicines comprise the means of cure; fresh succulent vegetables and fruits to constitute always a liberal portion of the nutrients.

In his Appendix he clearly states it as his conviction, grounded on observation and experience, that a diet, any diet, *deficient in the nourishing principle* is the cause of scurvy. He combats, at much length the conclusions of Cullen that scurvy is the result of an undue impregnation of the blood by salt.

Trotter on Scurvy, 1792.—Additional Observations, 1795.—He divides his subject into the history, the theory, and the prevention and cure. He objects to Cullen's defini tion. "In regione frigida, post victum putrescentem, salitum ex animalibus confectum," and offers the following: "Asthenia, stomacace, in cute maculæ diversicolores, ple-

rumque livescentes; deficiente simul vegetabili materia recente, eundem vehemente ingerendi desiderio." He makes in fact, the want of recent vegetable matter the *main cause* of scurvy—that where recent vegetable matter abounds, scurvy is unknown—(quite different from Lind, who states that some will fall under its influence while living on fresh vegetables)—that the anxiety to obtain fresh vegetables is the harbinger of the disease, and its constant attendant through all its stages—but that the depressing passions of the mind very universally concur in the production of scurvy, while the elevating passions tend to prevent it. He still further admits that whatever debilitates the body pre disposes to it. He ignores the term *scorbutic habit*—and that different eruptions are scorbutic. It would almost appear in some of his ideas that he lays the fault *wholly* to a want of fresh vegetables, but still he acknowledges that what we know of its pathology is not sufficient to ground a rational therapæia.

His theory is, that scurvy is owing to *deficiency of oxygen* in the blood. This he supports by the very dark color of the blood in scurvy—by oxygen being largely combined in vegetables, fruits, and acids, the remedies and preventives—by the longings for these, etc. He thinks the remote cause abstracts oxygen and so causes scurvy, and that the remedies, as the acids, for instance, are decomposed in digestion and the oxygen is thus restored to the blood. Does not seem to have any idea of the necessity of any other element being restored.

In his additional observations, 1795, he states that his pneumatic theory has been well received, and extended to other diseases—that Dr. Beddoes had chiefly distinguished himself by adopting his theory. In answering objections made, he reiterates that the proximate cause is a diminished proportion of oxygen in the blood, chiefly proved by its dark color. The observations are chiefly cases. He concludes as follows: "There is no disease has afforded so much scope for speculation as the one we are now treating of. It was putrefaction with Pringle; privation of fixed air with McBride, weakness of the digestive organs, and want of nourishment with Lind; debility of the moving fibres with Milman; the

evolution of a superabundant ammoniacal salt with Cullen and we, to account for it on more novel discoveries, have tried to demonstrate that it is the abstraction of oxygen from the system. I presume not to promise my opinions a longer reign than those of such illustrious predecessors."

Jackson on Scurvy, 1792.—His theory is, that scurvy is caused by noxious alimentary ingesta—that it is a deranged state of the whole system, fluids, and solids—thinks that pneumatic chemistry will upset the humoral pathology—thinks the noxious alimentary matters become putrescent in the capillaries—partly adopts Trotter's theory, but claims debility or the loss of vital power to be the predisposing general cause of scurvy, whatever various remote causes may have concurred to produce the diminution of vital power—believes the scurvy a world-wide scourge, produced by the bad state of the food —recommends oak bark in the cure, besides the usual antiscorbutic regimen.

Beddoes on Scurvy, 1793.—His theory of scurvy is, that it is owing to the gradual abstraction of oxygen from the blood and tissues, the same as Trotter's, as death from drowning is the sudden arrest of oxygen being received into the blood through the lungs; differing from our view as regards the main office of the lungs, viz., as an emunctory—thinks it only an inference that oxygen is acquired through aliments, but certainly proved that it enters by the lungs—differs from Trotter, who thinks a deficiency of fresh vegetables alone an occasional cause of scurvy—thinks we must build our hopes of prevention and cure upon the acids—exercise cures by introducing oxygen—nitre good in the cure—vinegar presumed to be good—says more confidence may be placed in Lind's experience in the scurvy than in that of all other writers put together—upon the whole he is one who may be accounted a theorist, rather than a sound practical writer.

Withers on Scurvy, 1794.—Nosology has not been able to define it—whether known to the ancients or not, a matter of no importance—the notions of acid, alkaline and other

scurvies preprosterous—the causes producing it have always been the same, pretty much, viz., locality, climate, season, cold, dampness, and a *deficiency of fresh vegetable matter;* though Lind has observed it to occur from opposite causes, and surgeons of East Indiamen had informed him that they met with it in ships *when the crews lived wholly on rice!* This shows how little the nature of food, and why its power to preserve health, were understood at the date of this author's production. He thinks with Cullen, that the salt, taken with salted provisions, is a cause of scurvy, differing from Lind and Milman, who think sailors' fare produces scurvy on account of its *innutritious* qualities—thinks the diet of seamen not productive of scurvy because of difficult digestion, and that scurvy is no sign of a weak stomach—advocates the doctrine of a superabundant animal salt, and putridity of the blood, and lauds Cullen's humoral doctrines. He says elixir vitriol, sour krout, and essence of wort are the preventives of scurvy in the British Navy—their inadequacy shown—recommends pickles instead of sour krout—punch instead of the grog used—lime-juice strained and bottled, which he found to have retained all its antiscorbutic virtues after fourteen months on the coast of Africa.

Claiborne on Scurvy—*An Inaugural Thesis submitted to the Faculty of the University of Pennsylvania*, 1798.—He makes it a state of fever, following Dr. Rush's view, as he says—prevails in all climates—debility its first symptom, and nothing new in the phenomena—the remote causes are, impure air, peculiar kinds of diet, long abstinence from vegetable food, idleness or inaction, depressing passions, spirits, and all the remote causes of fevers in general. Some of these are exciting causes, and the two classes of causes cannot be accurately separated. The impurities in the air, he knows not what they are—peculiar diet refers to salted meats, but he excuses this cause greatly and charges the evil to the air heroically—does not charge the evil to want of vegetable food and fruits or lay great stress on this cause—credits depressing passions as entitled to much weight in causing it—also

drinking spirituous liquors—and also all the remote causes of fever, which he thinks act slowly, and cites marsh miasm.

He says the predisposing cause is debility, whether natural or acquired. Examines the theories of most writers as to the proximate cause, but adopts Rush's theory of fever, and makes it to consist in morbid action of the blood vessels. He shows that Trotter's want of oxygen theory is fallacious, but still holds to his theory of impurities in the air being the main cause. That scurvy is a fever he infers from the fact that, those most liable to it are also most subject to fever—from the same causes producing it, and also other states of fever—its prevailing in the same places and at the same time with them—and because there is more or less febrile action in every instance. He makes a strong argument here, showing that Lind and other authors do not sustain their position, and showing that all the symptoms of fevers are attendant on the scurvy. In the cure he bleeds and purges; gives diuretics, diaphoretics, tonics, and enjoins pure air and vegetable food and acids.

Bampfield on Tropical Dysentery, Scorbutic Dysentery and Scurvy, 1819.—This author's observations were made in the East and West Indies as surgeon in the British Navy. His tropical dysentery he considers, as *caused* by the general meteoric and climatic influences, and undigested food and fruits; and that scurvy is the cause of a distinct kind of dysentery.

The scorbutic dysentery he says arises from a dilapidated state of health and impaired digestion—his experience differing from Trotter's who declares that no symptoms of a weak stomach are present in scurvy!—that it assumes the form of any chronic variety of the supposed non-scorbutic species to which the patient has been subject—those affected with simple dysentery at sea, very liable to have it *changed to the scorbutic*—that a ready predisposition to this diathesis is acquired by a very short residence between the tropics. He differs from all who hold that scurvy is soonest induced in cold climates, his experience being the exact reverse, that *it is much sooner induced within the tropics*—He holds, too, that there is no prophylactic against scurvy but a *full diet of fresh*

animal and vegetable food, for that it is only under those circumstances that he has not known it to be produced—that Dr. Trotter's celebrated restorer of oxygen to the blood, citric acid, did not maintain its reputation within the tropics—that lime-juice or the citric acid, as used in the British Navy, must be greatly increased in the dose or quanity used within the tropics to be effectual either in curing or preventing scurvy; which is no doubt very true. As we have said in speaking of lemon-juice in yellow fever, See Appendix to Cholera Infantum Essay, where we hold that these acids and vegetable juices must be continually, that is, daily imbibed in southern, or hot climates, as a means of preventing attack. Nothing especially new in his treatment.

This concludes our epitome of authors since 1772, such as we have been able to reach; probably there have been some other treatises produced, but these are the chief in English dress. One thing will strike the reader; it is the crop of authors that sprung up during the pestilential period of from 1790 to 1800, viz.: Thompson, Trotter, Jackson, Beddoes, Withers, and Claiborne; six of the nine: and Milman and Blane wrote immediately after the extraordinary epoch of 1780, that produced a brief pestilential period.

VIEWS OF COTEMPORARY (MOSTLY LIVING) AUTHORS ON SCURVY.

Our chain of authorities to be complete should embrace the peculiar views on scurvy of pathologists, even to the present day. We therefore offer a few extracts from cotemporary, and mostly living authors, giving, as briefly as possible, the views on this subject of both humoralists and solidists. The object is not to seek to present the views of all, but of a few prominent authors, as found in standard systems of practice, in order to make our record cover the leading doctrines on scurvy, through all its history down to the present time.

Dr. Good's Views on Scurvy.—"This species [land scurvy], the morbus maculosus Werlhoffii of the German writers, is sometimes marked by febrile paroxysms, with

variable intervals, but usually occurring in the evening. It has no regular or stated termination. * * * It is met with at every period of life, but chiefly affects persons of a weak and delicate habit; often children, principally women.

"The precursive symptoms are, lassitude, faintness, and pains in the limbs, so that business, or even company is found fatiguing. After this there are often shiverings, nausea, and vomiting. The purple eruption, for the most part, appears first on the legs, and afterwards, at irregular periods, on the thighs, arms, and trunk of the body; the hands and face generally remaining free. The spots, however, are frequent on the interior of the mouth, and particularly the tonsils, gums, and lips; where they are sometimes raised or papillated. It is here the first hemorrhage commonly issues; though as the disease advances, blood also flows from the nostrils, lungs, stomach, intestines, and uterus, all which organs, together with the heart, are sometimes found studded with spots on their surface, on examination after death. The hemorrhage is often profuse, and cannot easily be restrained, and is ac companied with anasarcous swelling. It sometimes precedes the purple spots, but more commonly takes place a few days afterwards. It is this rapid erosion, or ulceration of the blood-vessels, and consequent discharge of blood, often accompanied with diarrhœa or dysentery, where the intestines associate in the complaint, by which land scurvy is chiefly distinguished from sea scurvy, and acquires the distinctive name of *hemorrhagic;* since, though these symptoms may also occur in the latter, they do so rarely, except in the last stage of the complaint.

"*Remote causes.*—The most usual remote causes of the present, as of the preceding species, are poor diet, impure air, anxiety of mind, and a sedentary mode of life; and if women under these circumstances, and affected with this complaint, be wet nurses, their infants participate in the disease from the milk not being sufficiently nutritious."—(*Study of Medicine.*)

The doctrine of *insufficient* nourishment as a cause of scurvy is here fully maintained—also *bad quality* of food—bad air—moral depression—and inaction: in other words, *whatever debilitates. Infants,* as subjects, are specified; also, *nursing*

mothers, and the *sore mouth* condition. *Fever* attends it too, according to Dr. Good, and *vomiting and purging*, often; diarrhœa, dysentery, and red blood hemorrhages.

Dr. Caldwell's Views on Scurvy.—"Every phenomenon connected with scurvy, pronounces it to be a gastric disease. It commences in the stomach, and thence propagates its morbid action throughout the entire system of assimilating organs; to which we might add the organs of nutrition. Hence the change that ensues in the state of the fluids. The whole apparatus which prepares them being disordered in its action, it cannot be expected that they will remain sound. But the fluids neither are or can be the part of the system that is originally assailed. They are, in all cases, and essentially, *the children of the solids*, and immediately dependent on them for their state and condition. As long, therefore, as the constitution of the parents continues sound and their action orderly, the constitution of their descendants cannot be impaired; for, it is, in living as in dead matter, a law of nature that under similar circumstances, similar causes are necessarily productive of similar effects. From the healthy action of the healthy solids, therefore, healthy fluids must always proceed." —(*Note in Caldwell's Cullen.*)

Ultra views like these are easily refuted, when the true pathology of scorbutus is understood to be a want of the elements (especially the mineral earthy and alkaline salts) of the tissues. The solids could never create these. They must be introduced in the food, and be digested in the secretions, go the round of the circulation, and be precipitated in the quaternary compounds of fibrin, albumen, etc., that constitute the blastema; or if not precipitated held in combination in them. The presence of these minerals is necessary to the very organic constitution of these proximate elements of the tissues, the chemistry of which is so obscure, and necessary also to the recombination of the elements of effete fibrin in the road of excretion, as well as of other effete compounds found in urine, sweat, etc. Strictly there are no solids in the human body or fluids either—nothing is so solid it has not fluids in it; nothing so fluid it has not solid material in it.

Dr. Gregory's Views on Scurvy.—"The whole train of symptoms manifestly points out *extreme feebleness of the powers of life,* as the leading principle in the pathology of scurvy. Attempts have been made, however, to define more accurately the *seat* of the disease. Dr. Lind is of opinion, that scurvy consists mainly in a weakened and relaxed state of the *solids.* Dr. Cullen on the other hand imagines that a putrescent state of the blood (the result of its complete impregnation with salt) is the true proximate cause of the disease. How far the latter opinion is correct, is hardly possible to determine, for we have no authentic accounts of the disease appearing, where salt provisions could fairly be considered as the *sole* agents in its production. Common sense and pathology equally teach us, that in scurvy there is *laxity of the solids* and *putrescency of the fluids* and that in fact every function and structure of the body participates in the general weakness."—(*Gregory's Practice.*)

Dr. Wood's Views on Scurvy.—"All the phenomena of scurvy, as well as the character of its cause, point to the blood as the original seat of the disorder. Some have supposed that the first link of the chain of diseased action is in the function of digestion, which fails to effect a due elaboration of chyle out of the materials presented, and thus produces a vitiated blood. But the fact is, that the organs of digestion are remarkably exempt from derangement throughout about the whole course of the complaint. * * *

"In relation to the organic constituents of the blood, it appears from a comparison of the analyses most to be relied on, that, upon an average, the proportion of albumen is about as in health, that of fibrin slightly increased, and that of the red corpuscles greatly diminished. The saline constituents are in about the normal quantity, [but what proportion is in the road of excretion, and effete, has not been ascertained.] The microscopic characters of the red corpuscles, and their chemical constitution, so far as discovered, do not appear to be altered. There is something wanting which is afforded by a diet of fresh, and especially of succulent vegetables: what this is has not been determined, and it is useless to conjecture, the

question must be left for solution to the skill of the analytic chemist."—(*Practice of Med.*)

Dr. Kerr's Views on Scurvy.—"The predisposing causes are numerous, and vary in their nature, but concur to occasion debility, whatever they may have been. * * * With regard to diet, the most constant peculiarity which has apparently caused the occurrence of scorbutus, has been a deficiency in the proportion, or an entire privation of succulent vegetables. * * * *

"The complication of inflammatory diseases with scorbutus in constitutions naturally robust and not much debilitated, will sometimes require V. S. and antiphlogistic treatment; but diarrhœa, dysentery, pneumonia, and other morbid conditions which have been coexistent with it, have not unfrequently resisted modes of treatment peculiar to them, and have disappeared together with scorbutus when the remedies appropriate to the latter disease have been had recourse to. * * A case of severe ophthalmia, which appeared conjointly with slight symptoms of scorbutus, * * resisted a variety of applications, both external and internal for five months, when the acid of limes was thought of, which effected a cure in twelve days.

"In some cases of apparent phthisis accompanying scorbutus, * * the disappearance of both forms of disease was evidently effected by the remedies appropriated to the removal of scorbutus alone."—(*Cyclopædia of Prac. Med.*)

Now, when the above views are taken in connection with Rokitansky's, that all local diseases, even the phlegmasiæ, are consequent upon a general dyscrasia, unfitting the blood for the service of nutrition, and the abundant testimony we have adduced, showing the scorbutic diathesis to be a general, *natural*, idiopathic or primary pathological state, and to depend on defective nutrition, the argument is a very forcible one in favor of a one primary pathology, and that scorbutic, particularly when it is further considered that no other primary pathology has been shown.

Dr. Budd's Views on Scurvy.—We have quoted the

views of Dr. Budd so fully in our foregoing essays, illustrating the absolute necessity of succulent vegetables and fruits in the dietary, as the only preventive of scurvy, and his view that the inlaid taint after cold winters modifies all diseases, that it is not necessary to present his views more in detail.

ANALYSIS OF LATE PAPERS ON SCURVY.

We come now to the consideration of still later views. There has been but one great outbreak of recognized scurvy since the transition period between the old authors and the present day. This occurred during the pestilential period that produced the Irish famine; and another crop of authors was the consequence; not elaborate treatises, for the day of *books* on scurvy had passed, but monographs, or papers contributed to the medical journals.

This general outbreak of scurvy was an unlooked for occurrence, and took the faculty by surprise. In consequence of its infrequency within the lines, nosologists had sought to confine it, practitioners had arisen who truly thought they had never seen it. Dr. Gregory has spoken of it as "a disease he had seldom seen and hardly expected to see."

After the adoption of lemon-juice at sea in 1795, about the culmination of the blighting cycle of years that closed the last century, and the elements became quiet, the world was generally congratulated as having got rid of scurvy. These triumphs of civilization, as the grounds on which those opposed to the generalization of disease to a scorbutic root prevailed, have been spoken of, and are not fancies. The more general cultivation of the potato as a field crop, since that period, in latitudes suited to its habitudes, has undoubtedly had great influence. But not to descend to particulars, HORTICULTURE, CIVILIZATION, and LEMON-JUICE, as we have said before, had seemingly banished scurvy from sea and land, but through a respite, it must be remembered, from any *prolonged* cycle of non-average years and seasons, until that which culminated in the Irish famine, when scurvy in its old chronic dress again presented itself. True, it had manifested itself in prisons, armies, garrisons, frontier settlements, etc., in

various parts of the world, and always coincident with blighting influences and defective nutrition, but everybody had lost sight of it as an epidemic sweeping whole countries. True, according to our doctrines, the cholera of 1832 was but a manifestation of it in a modified form, obedient to the constitution of those blighting years, and the modified susceptibilities of better fed nations. Still, the doctrine of the schools is, diseases are distinct idiopathic, plural entities; and if thousands perished of a white-blood hemorrhage from the stomach, in 1832, it was judged a totally and radically different thing from thousands perishing of a red-blood hemorrhage from the bowels in 1795 or 1847; and so the whole matter was lucidly explained by calling the white-blood hemorrhage, *Asiatic* Cholera, or "a new disease," and its cause charged to the "epidemic influence," a very convenient slang phrase, covering ignorance, that mystified the whole matter, and which makes the art of presenting a *perfect* system—of empiricism.

The papers, or new crop of contributions on scurvy, from new observers, which we propose to examine in this concluding section of our work, appeared mostly in the British Journals during the reign of that chaos of so-called distinct diseases, portrayed in the Census of Ireland, where the order of the epiphenomena was, "Fever, Scurvy, Diarrhœa and Dysentery, Cholera, Influenza, and Ophthalmia;" and "118,835 cases" of the latter form of disease occurring in three years in the work-houses in Ireland alone, may serve as an indication of the general prevalence of all, and how "occult" the poisoning influences must have been, if aught else than impaired nutrition or the *scorbutic diathesis* lay at the bottom. These papers, as they have reached us, have been mostly in the abstracted, analysed, or reviewed form, sufficiently retaining the peculiar views and points of their respective authors, however, to serve our purpose, in posting up readers as to the progress that has been made through the late manifestations of scurvy, beyond what is contained in the old authors or the standard systems of practice already noticed.

This list of contributors is as follows: Dr. Shapter, Pro-

vincial Medical Journal, June, 1847.—Mr. Stiff, Medical Times, June, 1847.—Dr. Christison, Edinburgh Monthly Journal, June and July, 1847.—Dr. Lonsdale, same Journal as the foregoing, August, 1847.—Dr. Bellingham, Dublin Medical Press, July, 1847.—Dr. Ritchie, Edinburgh Monthly Journal, July and August, 1847.—Dr. Curran, Dublin Quarterly Journal, August, 1847.—M. Fauvel, Archives Générales, t. xiv —See Provincial Journal, Oct. 1847.—M. Marechal, Communication to the Academy of Sciences—See Medical Gazettc, No. 34.—Dr. Foltz, American Journal of the Medical Sciences, January, 1848.—Dr. Garrod, Edinburgh Monthly, January, 1847.—Dr. Holmes, St. Louis Medical and Surgical Journal, March, 1848.—Dr. Dawson, Western Lancet, December, 1850.—Dr. White, Nashville Journal of Medicine and Surgery, Decembcr, 1851, and February, 1852.—Editor or Reviewer, British and Foreign Mcdico-Chirurgical Review, October, 1848, in which No. sundry of these Papers are analysed, the theory of Dr. Aldridge dcbated, and the cxaminations of scorbutic blood by Busk, Becquerel, Rodier, and others given. Ranking's Abstract, July to December, 1847, epitomizes many of these papers, giving the facts, observations and conclusions of the several writcrs, but draws no conclusions of its own independently. But the Medico-Chirurgical takes the magisterial stand, and not only draws conclusions but argues the proprositions, and boldly enunciates opinions, differing widely, in some instances, from the conclusions and deductions of the writers, and which, here and there, appear to us to be unsound as well as authoritative, and therefore calculated to retard science. There may be other latc contributors, but if so their Papers have escaped our notice. We have quotcd and extracted already from sundry of these able contributions, in support of our conclusions in the foregoing cssays. Our object in this analysis is to complete the historical record as well as notc thc progress madc, in order to see how far the recent observations sustain our views of primary pathology.

We cannot open our analysis with any remarks more appropriate than the following to be found in the outset of the Review.

"The discussion on this renewed outbreak of scurvy has for us a peculiar interest. We have witnessed this disease, [a supposed unit entity, one among many,] so much debated by the great writers of the 17th and 18th centuries, suddenly submitted to the scrutiny of the more finished science of the present day. For the first time since the study of organic chemistry has been sufficiently matured to allow us to investigate the penetralia of the system with some prospect of success, cases of scurvy have become sufficiently numerous to furnish a proper extent of observation. It is not only a matter of curiosity, it is a subject of the greatest importance, to determine of what the powers of the chemist are really capable, and how far our researches have been able to unravel the phenomena which proved so puzzling to our forefathers. For, this investigation into the success or failure of modern chemistry, and this comparison between our speculations, and the hypotheses of Wierus, of Hoffmann, or of Willis, may serve as some sort of index of the benefit we shall derive from chemistry in [the supposed] other diseases, and as a test of what the present amount of science will in our time be able to effect. And we believe we are justified in affirming, that while in the description of obvious and external phenomena, and in the determination of remedial and therapeutic means, little or nothing has been added to the elaborate descriptions of the writers of the last century—in the analysis of the more recondite and deep-seated processes of which these phenomena are signs, we have made a real and tangible step towards the discovery of the true pathology of scurvy."

Our readers are better prepared now to enter into the merits of this discussion, we think, from having "the fathers" before them, than from merely having them referred to. The speculations and hypotheses of the generalizationists and oppositionists, and those who have recorded their views since the question that divided them went by default and nosology triumphed, are all placed here in juxtaposition. The laws of nature, too, have been illustrated—the elemental disturbances that *cause* epiphytics, epizootics, and then epidemics. These laws and the rationale thereof—the reasons *why* the vegetable kingdom, animals, fishes, and men are thus rendered sickly have been shown;

and they have been shown, too, by the data which the *chemistry* of vegetables, and of the animal tissues affords. The philosophy of this whole subject, then, can be viewed with more pleasure, we apprehend, now, and with a fairer prestige of compassing it, than when the able and elegantly written review from which we have quoted, analysed the papers.

The arrangement that seems to us most natural in examining and presenting these papers, and best calculated to serve our readers, is to notice the strong points in each under 1, the *phenomena*, 2, the *causes*, and 3, the *conclusions;* and to do this with as much brevity as is compatible with the object—a fair presentation of the peculiar views and observations of each—in the hope of more certainly deducing truth from the whole.

Dr. Shapter on Scurvy.—This writer's observations were made at Exeter and vicinity.

Phenomena.—The initiatory symptoms, (which we would call a beginning expression of the scorbutic diathesis,) indicated *general debility*. The patient complained of weakness and listlessness, and had a sallow countenance.

State of the Gums and Mouth.—In this forming stage of the malady the gums were observed to be *pale* and *contracted* in *all cases* as the antecedent of puffiness that followed in the next stage; and common sense endorses this. It is the anæmia of commencing starvation; all the external tissues must be in a state of palor, for the blood has retired. Being deficient in quantity as well as in normal elements, the heart is not stimulated to propel it into the capillaries.

This is that state of the system described by Rush as the stage of debility preceding fever, before the *morbid action* of the arteries begins. The distance between it and fever, he says, is very brief, and yet fever may not follow. But in this stage, he says, the ordinary vital stimuli become irritants. Under ardent meteoric impressions and vicisitudes something must happen. If a whole people are thus affected in various degrees, an epidemic must result.

It is that state of system, too, described by Sir Gilbert Blane, where the *stimulus of the proper elements* of food, those elements of which the tissues are formed and by which

alone they can be repaired are wanting, as well as the proper bulk to create the *stimulus of distension.*

It is that state spoken of by Sydenham where we are led to *suspect the scurvy*, till the toe swells (gout), or the belly fills (dropsy), or some other symptom removes the embarrassment of the nosologist.

It is that state spoken of so frequently and so emphatically by Lind as the forming stage of scurvy in a *slighter or higher* degree.

It is that state so repeatedly spoken of by the old authors where *the commencing symptoms of scurvy are the same as the commencing symptoms of all other diseases.*

It is that state which we have endeavored to describe as the scorbutic diathesis, or primary pathology, viz., a want of the vital stimulus of alimentation or elements of nutrition in quality and quantity suited to maintain life and health.

It is that state in which so many of Eugalenus's patients died before the gums became affected, in the awfully pestilential period that culminated about the year 1600. But to return:

The tongue was, for the most part, clean in this early stage, and *the pulse* small, and not quicker than natural. The great numbers who applied early for relief at the city dispensary enabled him to make these observations as to the initiatory symptoms.

As the malady progresses, the debility increases, the limbs become painful, severely so, the gums swollen or spongy, breath fetid, skin bespattered with petechiæ and patches of purpura. In the one only fatal case seen, the breathing became slow and laborious, a bloody discharge exuded from the lungs, and coma ending in death closed the scene. He directs particular attention to the pale and contracted gums as a precursive sign—also pain in the loins a frequent symptom, in his cases, in the forming stage.

Cause.—Deficiency of food, and particularly of succulent vegetable food, he regards as the cause. He fixes on the absence of the potato in the dietary as the *fons et origo mali*, after a careful investigation of the matter. Cold, and other depressing influences only auxiliary causes. The preservative virtue of the potato supposed to be due to tartaric acid.

The season of year not mentioned; the constitution of the seasons not alluded to.

Mr. Stiff on Scurvy.—His observations were made on cases in the Nottingham union, of which he was surgeon, and among the poorer classes in the vicinity who suffered severely from deficient and dear provisions, especially the abscence of succulent vegetables, the potato particularly.

In the union potatos were obtained and used till Christmas, 1846—Swede turnips till March, when they could be obtained no longer—then Indian meal, rice, bread, milk and meat, variously dressed and prepared, as porridge, soups, broths and solid food, constituted the routine dietary. In a month or so after the turnips gave out the scurvy appeared, which brought it into the month of April 1847.

Phenomena.—Debility, inactivity, sallow countenance, and fugitive pains all over, were the commencing symptoms.

State of the Gums and Mouth.—When the above initiatory symptoms were first observed *the gums had taken on no remarkable appearance.* The first remarkable appearance in them was a *livid line* at the margin, and this showed itself even *when the mouth and lips were still anæmic,* and this livid line resembles the lead symptom. At length the gums swell, separate from the teeth, bleed, the teeth become loose, the appearances more remarkable where the teeth are decayed, and *in old and edentulous subjects the gums remain unaffected.* Petechiæ, and echymoses did not appear as early in young subjects as in adults—saw no cases in subjects under five years of age, even of infants at the breast of mothers affected.

Because in infants the epiphenomena are much varied by reason of their tender age. Dr. Good says infants participate in the disease from the milk not being sufficiently nutritious—some of the old authors say infants are most liable to it. In infants, however, it is *called*, watery gripes, or cholera infantum, convulsions, or something else.

Cause.—The cause of the endemic was apparent, and by the immediate adoption of cabbage, rhubarb puddings in the dietary, imperial as a beverage, and citric acid as a medicine, the evil was overcome.

Conclusions.—His conclusions are that the want of fresh succulent vegetables, containing the vegetable acids, must be the sole cause of the malady.

Dr. Christison on Scurvy.—The scurvy broke out in the general prison at Perth, in June, 1846, and continuing to hold, in the following October Dr. Christison and Dr. McLagan were deputed to inquire into the *cause.* This investigation forms the basis of Dr. Christison's Paper.

Phenomena.—He presents only such a brief sketch of the symptoms and appearances as will identify the malady with the scorbutus of nosographists.

Early Stage.—Scurfy *integuments*—pain, tenderness, stiffness or some degree of tension of the legs—some fullness redness, or lividity and tenderness of the *gums*, with tendency to bleeding on chewing—no material impairment of the *appetite* or digestion.

More advanced Stage or when fully formed.—*Legs*, mottled, with livid spots at the roots of the hairs, œdematous, very tender, extremely stiff, painful on motion, hard, ecchymoses diffused resembling contusion marks, morbid solidity or adherence of the integuments to the subjacent tissues so that they could not be pinched up, vibices; *gums* much swollen, bleeding; *epistaxis* in many; *hemorrhoids; menorrhagia* in some women; *pulse* frequent; *skin* warm; *tongue* not always clean; fetid breath, odor exactly as in salivation from mercury sometimes; in those yielding to treatment the ecchymoses of the limbs gave way to various chronic eruptions; diarrhœa rare, though cholera, dysentery and diarrhœa prevailed all through the country. (And, as we explain the matter, because when one fashion or variety of scurvy is so fully formed, it seldom changes: this is the law, and this law is the sole basis of nosology.) The old, and those longest confined most affected, and men more than women, and *constitutional infirmity* powerfully aided its development; for out of thirteen in whom the glands of the neck had previously suppurated and had been cured, six fell under this chronic form of scurvy.

Cause.—In analysing the prison dietary, it was found that the milk, which had for years constituted a part of the daily

dietary had been withdrawn and treacle and water substituted. This change, or the withdrawal of the daily rations of milk is held by Dr. Christison to be the *main cause* of the outbreak of scurvy in the Perth prison: and his

Conclusions are based on the fact that, a restoration of the before allowed rations of milk, put a stop to the epidemic, without recourse to any antiscorbutic remedy. Defective alimentation, therefore, he concludes is the cause of scurvy, or *insufficient nourishment* of the body. But he holds that the deficiency in this instance was in the *nitrogenous* element of the food.

This presented a new theory, *apparently,* and most if not all observers of scurvy at the time, differed and dissented from Dr. Christison, and brought forward instance after instance where scurvy occurred under a milk dietary. Dr. Christison, it is to be observed, does not hold that the deficiency of milk was the *sole* cause; he says: "It is very possible that the prisoners might never have suffered, had not some cause coöperated besides confinement and peculiarity of food. What this concurring cause may have been it is not easy to say. . . . . But the question may be left here, as there are no data for proceeding farther with it. And the utmost induction the facts will bear is, that a diet too purely saccharo-farinaceous tends to engender scurvy, that it requires the aid, however, of some coöperating cause or causes hitherto unascertained." (*Review above cited.*)

The sum of all observers on this point who have written on scurvy amounts to this, that *defective alimentation* of some sort, or *insufficient nutrition* is the remote or inlaying cause—cold, moisture, heat, moral depression, insalubrious air, and inaction, coöperating causes. Defective alimentation *in kind*, is almost as generally adopted, but as to the *kind of defect*, all are not agreed. The old authors generally ascribed it to a deficiency in the vegetable supplies, and this is to this day generally acquiesced in, the above coöperating causes aiding. McBride imputed it to a deficiency of carbon; Trotter to a deficiency of oxygen; and Dr. Christison has imputed it to a deficiency of nitrogen, but the aid of coöperating causes are still required by each. No one has imputed the cause to a

deficiency of *hydrogen* that we are aware of, though this element is as abundant and just as necessary in the system as oxygen, HO being the formula, and just as necessary as nitrogen. But why one element should be held to be more important than another (where the supply of all for growth and repair of the physiological waste, according to proportion, is equally necessary) we are not advised by any one who has maintained a one-idea theory, nor can we conceive a good reason. We hold that physiology and chemistry have furnished the "data for proceeding further," and that induction from the facts which these modern sciences furnish, explains clearly the cause and nature of scorbutus. It may lie in the want of one element in a given case, but generally lies in a want of many, doubtless, as under famine; and as vegetables and fruits furnish all in great plenitude and variety united with bulk, the reason why they are so useful and remedial is obvious. This subject has not been looked at comprehensively and philosophically. The antiscorbutic virtues of milk depend as much on the vegetable salts it holds, as on its carbon, oxygen, hydrogen, or nitrogen. Our view of the matter harmonizes all the theories of scurvy, and solves the mystery of its protean manifestations—explains the source of all disease, and the contingencies of its variations.

Dr. Lonsdale on Scurvy.—The observations of Dr. L. were made in the north of England on factory operatives and railway excavators. He appears to have sought for evidences to refute Dr. Christison's theory. In the factory operatives the food was deficient in quantity and variety, but in the other class abundant, yet wholly destitute of potatos or other succulents. Cottars who used milk abundantly still fell under scurvy, but they were wholly destitute of their accustomed potatos.

Phenomena.—The phenomena are but very briefly given in the Abstract and Review. Hemorrhages were frequent from gums and the usual sources, from the bladder in one case. In the advanced stages there was great difficulty of breathing.

Cause and Conclusions.—"1st. As the vegetable world became more and more blighted, man, in common with the

higher classes of animals, suffered from causes apparently of an epidemic character, which have deteriorated his condition, and rendered him a more facile victim to scurvy, fever, etc.

"2d. That scurvy originates in an error of diet, other supposed causes having little or no influence.

"3d. Deficiency of potatos constitutes the chief error in diet, and is the main cause of the present epidemic.

"4th. The use of milk lessens the liability to, but does not prevent its occurrence."

Dr. Bellingham on Scurvy.—Dr. Bellingham identifies the disease as that described by Lind and others, by an analysis of six well-marked cases received into hospital, and then delineates the general appearances and symptoms as they were manifested in the epidemic.

Phenomena.—The *gums* of the molars commenced swelling first, and upon the inside—the *spots* commenced on the legs early—large *patches of purpura* appeared only in the advanced stages, in one case the sclerotic coat of the eye was the seat, with no other symptoms of scurvy—but *discolorations as from contusions* appeared early, their seat mostly the legs—*swelling and stiffness of the legs*, pain, etc., sometimes commenced early, *œdematous swellings* only in the more advanced stages, and in one case was confined to one leg and appeared as phlegmasia dolens—*Debility* was an early and constant symptom, and finally rendered the patient incapable of almost the slightest exertion—*rheumatic pains* were in some the earliest symptom—*countenance* always characteristic, when advanced, bloated—lips blanched, yellowish, and expressive of anxiety—cheeks sometimes so swollen patient could not articulate—*dyspnœa and palpitation* in but few—*action of heart* more rapid than natural—*pulse* small and feeble—*hemorrhage* from gums, nose, and uterus only—*appetite* generally good—*tongue* usually clean but pale—bowels generally regular.

Cause and Conclusions.—"In reference to the causes of the epidemic, the author remarks that the subjects of the preceding cases appeared all to have had a sufficiency of bread; others had meat in addition, with sometimes wine or porter;

none suffered from an absolute deficiency of food; but all agreed in not having used fresh vegetables from the period of the failure of the potato crop of last year. It is clear, therefore, that the cause of the present epidemic may be traced to the absence of the potato from the dietary of the poor; and it is equally clear that a diet of bread, with or without meat or broth, is incapable of preserving the body in health, and tends to develop scurvy; while we know, from long experience in this country, that a diet consisting solely of the potato is capable of affording sufficient nourishment, and of preserving the body in perfect health.

"Now, he continues, the potato is placed by theorists nearly at the bottom of the list in the scale of articles of nutrition; indeed it has been assumed to consist of little besides water and carbon. According to the Liebigian theory, carbon, which is a large constituent of fat, but contributes hardly anything to muscle or bone, abounds in the potato, whilst the constituents of bone and muscle are abundant in peas, beans, wheat, oats, barley, and rye; *ergo*, the latter are much superior to the former as articles of food for the laboring population; and philanthropic individuals have calculated that an Irishman who consumes daily ten pounds of potatos would gain more nourishment and strength from a few ounces of peas or beans. Indeed, if all we read about nitrogenized and non-nitrogenized articles of food were correct, the potato would have fallen into disrepute long since; and it ought by itself to be incapable of supporting the strength of a laboring man; although for more than half a century it [with milk] has constituted the sole food of the great majority of the peasantry of this country, and we believe a healthier or a hardier population was to be met in few countries, contrasting sadly with their present altered aspect, after a diet for some months composed of more highly nitrogenized substances."—(*Abstract above cited.*) [Potatos and milk, if healthy, afford all the elements.]

Dr. Ritchie on Scurvy.—Dr. Ritchie's Paper is one of the most elaborate, and describes the epidemic as observed in the Glasgow Infirmary.

Phenomena.—The first appearances were, a low state of health, depressed, exhausted, and sallow look—the eyes sunken, sometimes of glossy whiteness, othertimes icteric, with dark areolæ around—nose pinched—mouth blanched—except where the seat of ecchymosed patches and chaps—gums livid—breath fetid—subjects either emaciated or bloated—the tumidity sometimes œdematous, at othertimes hard on legs, while the skin was loose and flabby on trunk and arms—skin sometimes scarlet, usually dark red, livid, or yellowish in blotches, tumors, scabs, petechiæ, etc.—joints, particularly knees, swollen, indurated, and painful—the mind enfeebled, depressed, in two cases *maniacal*, in one *dementia* with paralysis—tinitus, vertigo, deafness—neuralgic pains in head, neck, loins—heart's sounds short, snapping, ringing—humming bruit in jugulars—whirring and blowing sounds in carotids—pulse from 60 to 144, always easily accelerated, and sometimes so weak it could not be counted—capillaries empty—cutaneous veins flattened hemorrhages from nostrils and gums most frequent, sometimes profuse—no marked difficulty of respiration, except where hemoptisis occurred—tongue moist, clean, violet, or flabby and bloodless, or chapped, tender, and bleeding, indented—ptyalism generally—parotids swollen and painful as well as gums—*patients looked precisely as if mercurialized*—saliva ascescent—often extreme thirst—appetite good, often voracious—belly enlarged sometimes, meteoric or fluctuant—bowels in a large proportion slow, in others diarrhœa and flaccid belly—dejections whitish, or orange, with bilious vomiting—piles, with blood unmixed with fæces—urine of specific gravity 10·10 to 10·28, a few times bloody, once alkaline, never albuminous or otherwise abnormal, once dysuria.

"The author notices several distinct phases of the disease. One variety was distinguished by anemia, emaciation, diarrhœa, bloody stools, and dropsy, while the more distinctive symptoms of scorbutus were wanting.

"A second group was characterized by anemia, often by diarrhœa, rapidity of the pulse, epigastric pain or oppression, great general distress, an urticated crimson efflorescence on the skin, petechiæ, and hemorrhages.

"A third by pains most commonly along the course of the nerves, but at others situated in a bed of muscle, as the gluteal; the cases having a close resemblance sometimes to general rheumatism, and, at others, to ischio nervosa, morbus coxarius, or disease of the knee-joint; their true nature being manifested by the sponginess of the gums, a perhaps slight ecchymosis only, the inefficiency of ordinary treatment, and the good effects of a full diet.

"And, lastly, the more ordinary form, in which affected gums and legs were the prominent symptoms. These subdivisions of the complaint had a conspicuous generic community with one another in their history, exciting cause, general aspects, and indications of treatment."—(*Abstract above cited.*)

Causes and Conclusions.—"In reviewing the causes of the epidemic as far as they could be ascertained, Dr. Ritchie likewise found a deficiency of potatos and succulent vegetables to be the most efficient: cold and other debilitating agents operating only as predisposing or auxiliary causes."—(*Abstract above cited.*)

"The general fact, in regard to the food of all was, *that it failed in variety and in the quantity of its animal constituents*, and that in all but a fraction of the cases, in which they were very deficient, *the patients had been exposed for months to a total deprivation of fresh succulent vegetables.*"

Afterwards he writes:

"The errors in diet which have been stated, and, in particular, the want of proper vegetable food, were the true exciting [remote] causes; cold and other debilitating agents operated often as the predisposing causes of the disease."—(*Review above cited.*)

Dr. Curran on Scurvy.—Dr. Curran gives the history of the epidemic as it appeared in Ireland. He also recognizes four principal varieties, marked by distinctive symptoms, which he describes generally, or by class, as Dr. Ritchie has done, and then analyses the symptoms of the malady seriatim.

Phenomena—State of the Gums.—Dr. Curran speaks particularly of the *pale and bloodless* state of the gums, and in *four*

cases that fell under his notice they did not take on the usual swollen or diseased condition in any stage of the malady. The gum symptom is not pathognomonic of scurvy then; neither is the leg symptom. It was only in the fourth variety of Dr. Ritchie's classification of patients that the leg or gum symptoms were prominent. *Appearance of the legs*—petechiæ and ecchymoses common—a dark-blue discoloration round the ankle the most frequent symptom—sudden ecchymoses followed severe pains—discolored portions warmer than the surrounding parts.

Other Symptoms.—Epistaxis in at least half the cases, and in all stages—hematuria and bowel hemorrhages only occurred in old and broken-down subjects—hemoptisis and hematemesis did not occur—pains attended every case, aggravated by motion and the erect posture, most frequent seats calves, ankles, and heels, seldom in back, as noticed by Dr. Shapter—digestive functions uninjured in early stage, and bowels natural, but in advanced stage diarrhœa was present—pulse feeble—*bruit de soufflet* only met with twice.

The Dr. spends time in useless hair-splitting or diagnosing between so-called scurvy and so-called purpura. Lemon-juice, and Patterson's mixture of nitre and vinegar, relied on and found efficacious in treatment—nit. argent., tr. ferr., chlor. sod., tr. rhat. found useful locally.

Cause and Conclusions.—"The author distinctly shows that in his patients want of milk could not have been the efficient cause, as it was used in considerable quantities at the time of seizure and for some time previously. The active causes he supposes to be humidity, inactivity, and, more especially, deficiency of succulent vegetables. He shows that in four-fifths of his cases, at least, the diet had *been bread, with tea or coffee*, and in no single instance could he discover that green vegetables or potatos had formed part of their dietary." (*Abstract above cited.*)

"Dr Curran's paper is the only one we as yet possess which is devoted solely to the consideration of the scurvy which followed, in Ireland, the failure of the potato crop in 1846, and which, with its attendant plagues, typhus and dysentery, decimated the population of that unhappy island. It is a

most able article, and proves how great a loss the profession has to deplore, from its author's untimely death. We may be permitted to pay our passing tribute of respect to the memory of one among that band of self-martyrs, who sacrificed their lives in the performance of their duties, and in the noble attempt to afford such aid as science could give to mitigate the ravages of the 'famine fever.'

"Dr. Curran enters into a long analysis of the causes of scurvy, and sums up finally in these words: 'We may safely conclude that neither misery, nor the want of milk, flesh, fish, farinacea, nor any combination of these can be regarded as the cause of scurvy making its appearance.' (Op. cit., p. 103.) But he goes on to say that, in no case, and he had notes of 600, 'could he discover that green vegetables or potatos had formed a part of the regular dietary.' (Ibid., p. 110.) This principal cause is aided, Dr. Curran thinks, by cold and moisture, bodily inactivity, and moral depression. As regards milk, the patients in the North and South Union Hospitals, in Dublin, were at the time of attack using a pint of milk daily."—(*Review above cited.*)

The *quality* of milk has much to do with its efficacy in preventing scurvy. If produced by cows affected but partially with murrain (a scorbutic dysentery), which prevailed according to Dr. Lonsdale in 1842–3, and also in 1846–7, it should not be expected to prove antiscorbutic. In blighting years vegetation is sickly, and vegetables and fruits of poor quality. Under a long drought cattle become exceedingly scorbutic, and milk then contains few salts, and little nutriment.

M. Fauvel on Scurvy.—"M. Fauvel has narrated the history of scurvy as it recently appeared at the Salpêtrière. The patients were all of an advanced age, the youngest being 69, the oldest upwards of 80. They had all been previously in good health, and well fed. The symptoms and treatment were similar to those observed in this country. The most interesting portion of M. Fauvel's memoir undoubtedly consists in the analysis of the blood, which he details at some length, in accordance with the experiments of Becquerel and Rodier, and which

distinctly prove the correctness of the investigations previously made by Mr. Busk, with respect to the quantity of the fibrin." —(*Abstract above cited.*)

We shall recur to these investigations into the pathology of the blood shortly.

"M. Fauvel's cases occurred at the Salpêtrière in females advanced in years; the youngest was 69, the oldest 80 years of age. The first symptoms were wandering pains, feebleness, malaise, and change in the color of the skin. Fauvel remarks that this hue of the skin is quite peculiar, and resembles neither that present in anæmia, chlorosis, icterus, or the cancerous cachexia; it resembles, more than anything else, the fading yellow color of a disappearing bruise. The spots were situated as usual at the roots of the hairs, but in addition there were true purpuric spots scattered about, chiefly on the anterior surface of the limbs. The alteration in the gums could not be confounded with the general swelling and softening of certain forms of stomatitis, but there were fungous vegetations of greater or less size, developed exclusively round the neck of each tooth. M. Fauvel confirms an interesting observation made by several old observers, but not sufficiently insisted on by systematic writers, that in old people without teeth these vegetations do not occur, and the gums remain comparatively unaffected. In one case a single remaining tooth was surrounded by a mass of swollen gum, the tooth was extracted, and the gum immediately became level and firmer, while the other symptoms preserved their intensity. Coupling now this fact with the observation that the swollen and fungous gums have always appeared to be much more intense in cases occurring on board ship, it may be thrown out as a likely suggestion, that the gums are peculiarly affected because they are so much exposed to pressure and attrition. All parts suffer from pressure in scurvy—the merest rub causes an ecchymosis; the slightest possible blow produces an extensive bruise. The gums suffer in common with all parts, but in a higher degree in consequence of their vascularity, and also from their situation, which exposes them to pressure even in the mastication of the softest food, much more so, it may well be supposed, when hard biscuit and dense salted flesh are the articles of diet."

Thus, then, the world-renowned *pathognomonic* symptom of scurvy, swelled gums, depends on the accident of having teeth, and, shall we add, hard biscuit to eat! How difficult it is to sustain a false theory.

"In one of M. Fauvel's cases the saliva was acid, in all the rest neutral or alkaline. The urine was acid, moderate in quantity, without albumen, occasionally rather high colored, and of high specific gravity, but without any distinctive characters."—(*Review above cited.*)

M. MARECHAL ON SCURVY.—"M. Marechal (de Calvi), in a communication to the Academy of Sciences, refuses to acknowledge the justice of the conclusions against the older theory derived from the excess of fibrin. He states that in most cases of scorbutus there is more or less local inflammation, to which this excess is due, [and what causes *it*?] and that this is especially the case when hemmorrhagic infiltration takes place in internal organs, the extravasated blood exciting inflammation as a foreign body.

"In other communications contained in the French journals, an analogy of causation and pathology between scorbutus and typhoid fever is sought to be established, but upon no satisfactory grounds. The question is decided in the negative by the difference in progress of the two diseases, and in their treatment: scorbutus being of indefinite duration, and cured almost to a certainty by lemon-juice; typhoid fever having a definite course, and being quite uninfluenced by that, if not by all other treatment."—(*Abstract above cited.*)

It seems the French physicians, are noticing the analogy between typhus and scorbutus in cause and pathology, so that the work of seeking after truth in generalization is going on in France, England and the United States, at least; and will go on in spite of the cold water thrown on the communications by the Journals and Reviews. As to the decision adverse to the identity of typhus and scorbutus on the grounds stated by the Abstract, because typhus has a definite course to run and cannot be interrupted by lemon-juice or other treatment, this we know to be an error. Typhus, like scurvy, if we must speak of them as two, in order to be understood, *has no stated termi-*

nation. We have seen so-called typhus run from a few days to forty, and Hippocrates reports cases running sixty or seventy, and the doctrine is, that it may terminate on the second, fifth, seventh, ninth, eleventh, fourteenth, seventeenth, twenty-first, and—our readers must excuse us, we have forgotten the critical days thence to the contingent end of the chapter. That it has been repeatedly cut short by lemon-juice, quinine and brandy or wine, after deafness had supervened, we also know positively; and we have cited authority to show that it is often so intercurrent with so-called malarious fever as to render it impossible to decide which form predominates. (*See Transactions of the Am. Med. Ass.* Vol. VIII.—*Reyburn's Report.*) Lemon-juice, and all the antiscorbutics Lind could command in Haslar Hospital failed to cure a portion of the cases of scurvy admitted. It is not a proof positive that typhus is not scurvy because it is obstinate.

Dr. Foltz on Scurvy.—This writer's observations were made in the Gulf squadron, ships Raritan, Potomac and Falmouth, of the U. S. Navy, employed in the blockade of Mexico. The scurvy prevailed not only in the squadron, but also in the army invading Mexico; in overland emigrants to California; and severely among the new settlers and gold diggers; and mildly through the Mississippi valley; and secretly and unobservedly throughout the United States, at the period of Dr. Foltz's observation.

Phenomena.—"The attack commenced almost always with rheumatic pains in the lower extremities, and in the early cases the true affection was not at first detected. It was noticed, however, that with these pains there was no fever, the pulse was soft and natural; the temperature of the body lower than usual. After some days the gums began to swell, and the breath to become fetid; maculæ then appeared over almost the whole body. The most robust and industrious seamen [on the Raritan] were, contrary to general experience, attacked first."

It may have so appeared, but appearances are often deceptive; we have not all the facts. The Raritan was longest at sea, the worst ventilated, and her crew disappointed of

reaching home by being forced into blockade; and in this ship the scurvy was most severe. All this is conformable to sound reason. But when it is asserted that, of all that scurvied crew, the robust were first attacked, it conflicts with sound reason, and we must conclude the facts are not all put; and we are justified in this conclusion because nothing is said of any other forms of sickness, than so-called scurvy. The fevers, intermittent, bilious, and typhus; the diarrhœas, choleras, dysenteries; the pneumonias and other phlegmasiæ; the rhuematisms, neuralgias, and the thousand-and-one other ailments not held to be scorbutic, but which always afflict crews long at sea, and *arise from the same causes*, are not mentioned. The old naval surgeons, Bisset and others, called these forms of disease, scurvies, and we think they were right. But other facts besides this, are doubtless wanting. All were dreadfully scorbutic, necessarily, without exception, and, of the most exempt, why the apparently most robust of these took on the gum and leg scurvy symptoms first, might not be difficult to explain if we had all the facts. The plump and robust in appearance are not always the subjects that are most sound on the contrary they are frequently the most scorbutic.

"There was another peculiarity also in this attack, that there was little of the customary languor and indisposition to exertion until the disease was far advanced; then ensued as usual great prostration and tendency to syncope, but even then there was in some cases a disposition to muscular exertion which proved hurtful in several instances. After the disease was fully formed, œdema was the most common symptom, next maculæ, or complete discoloration of the skin, particularly of the legs; in one case, in addition to being black and hard, the skin of the lower extremities became insensible, and dry gangrene was apprehended. The discoloration first showed itself in the situation of old cicatrices and injuries; it varied in color from that of a light scarlet erythema to a deep almost black purple. Ulcerations were uncommon, but very obstinate when they did occur; they sometimes originated from the patients scratching the petechiæ, and it was noticed that the ulcers spread most rapidly where the discoloration was greatest.

"As usual, the appetite remained good for weeks after the teeth were loosened, the gums ulcerated, and the limbs œdematous and discolored.

"In all the aggravated cases two symptoms were prominent; the temperature of the body was lower than usual, and there was great disorder in the action of the respiratory function. In two cases there was intense pain in the region of the heart like that of angina pectoris, and in a great number of cases there was manifest disease both of the heart and lungs, and it was noticed that these cases recovered very slowly. In fact, although not proved by post-mortem evidence, there can be little doubt that these were attacks of *scorbutic pericarditis and pleurisy,* [mark this reader.]"—*Review above cited.*)

Cause and Conclusions.—He ascribes the outbreak to the bad plight the ships were in, the great length of time in which they had been in commission, the change in the navy ration which furnishes salt meat every day in the week, instead of allowing one day as heretofore, in which no animal food was served out, and the small quantity and indifferent quality of the vegetables used.

Dr. Garrod on Scurvy.—"After some preliminary considerations, he states that in all scorbutic diets potash is deficient. He proves this by analysis of bread, flour, potatos, mutton, etc., determining the amount of potash in each, and then calculating the amount which would be taken in a certain time, according to the supply of these articles of food. In the Crediton union, for example, the weekly supply of potash under the ordinary diet was 186 grains of potash for the men, and 181 for the women; but when rice was substituted for potatos, the amount was reduced to 51 and 46 grains. In salt meat also he finds a diminution of potash, produced apparently by the action of the brine, causing exosmosis of the potash salts. He then states that all bodies proved to be antiscorbutic, contain a large quantity of potash. All fruits contain this salt,—potatos, milk, fresh meat, pickles, sour krout, spruce beer, malt liquors, the lighter wines, etc. Alluding particularly to fresh meat, Dr. Garrod states that

the carnivora must take a sufficient amount of potash to prevent scurvy.

"The next statement is, that scorbutic blood is deficient in potash; this opinion is founded on a single analysis of the serum. From 100 grains of dry, healthy serum, Dr. Garrod obtained 1·582 grains of the double chloride of potassium and platinum; while from the same quantity of scorbutic blood he obtained only 0·627 grains. In a single analysis of the urine, he also found a less quantity of excreted potash. * *

"Dr. Garrod next states that cases of scurvy recover, when a few grains of potash are added to the food which previously had given rise to the disease. * * *

"Finally, Dr. Garrod points out the importance of potash, and he refers the muscular weakness to the want of the potash salts, which, as Liebig has shown, are essential to the action of muscle."—(*Review above cited.*)

Dr. Aldridge on Scurvy.—We give the theory of Dr. Aldridge also, as we find it set forth in the Review. His is but an extension of Dr. Garrod's theory, and they are both ignored in connection.

"Dr. Aldridge's theory is very different from Dr. Christison's, [and very much nearer the truth, we think, than Dr. Garrod's, though all theories that hold scurvy to depend on a want of any one element of the tissues, as carbon, oxygen, nitrogen, or potash, are right as far as they go.] Dr. Aldridge does not hold that a deficiency in nitrogenised food causes scurvy; but that the real cause is a deficiency in certain minerals which enter into, and are essential to, the existence of nearly all the proximate principles by which the animal structure is built up [hear]. These principles are phosphorus, sulphur, lime, potash, and soda; the daily waste of sulphur is calculated to be about 20 grains, and that of potash and soda 84 grains, in an adult of ten stone weight. Now Dr. Aldridge finds that both seeds and flesh are usually deficient in sulphur and the alkalies. The quantity of wheaten flour which could supply the waste of nitrogen, carbon, oxygen, and hydrogen during a single day, can only supply 17 grains of sulphur, and 43 grains of the alkalies. In the same way a

quantity of peas which can supply the waste of the four proteine-elements, can only give 11 grains of sulphur and 55 of alkalies. The herbaceous parts of vegetables, however, cannot supply nitrogen in sufficient quantity, but they contain the minerals in abundance; while the potato contains both organic and inorganic principles in just proportion to compensate for the necessary waste."

In refuting these theories, the Review does not speak to the *main question* presented in Dr. Aldridge's theory and implied in Dr. Garrod's, viz.: that these "minerals enter into and are *essential to the existence* of nearly all the proximate principles by which the animal structure is built up." He cannot see the use of these little quantities of potash, sulphur, etc.; besides, these theories are not supported by any analyses of the blood yet made; and further, if these theories were true, the administration of these chemicals would immediately cure.

We answer, the bones must have lime, the muscles potash, the skin sulphur, and so on through the whole catalogue, to repair their daily waste. They are all necessary in the blood, the albumen and fibrin, of which the tissues are formed. They are as essential to the existence of healthy albumen and fibrin, and globulin and serum, as hydrogen, or oxygen, or nitrogen, in proportion to the quantity the whole system requires for the particular tissues. The bones, for instance, require a great deal of lime. Reason shows us these things, if analysis has failed. And furthermore, they *must come* through *vegetable organization*. This is God's law. Dead chemical food will not suffice. It is good as medicine only.

Dr. Holmes on Scurvy.—We have already quoted so largely from this paper, that we need only refer the reader to page 301, vol. i.

Dr. Dawson on Scurvy.—The fact that scurvy prevailed as an epidemic in Cincinnati during the raging of cholera in the summer of 1850, the basis of this paper, is a very important one. See this writer's views as quoted in vol. i. p. 304 of these researches.

Dr. White on Scurvy.—Dr. White says: "A search among medical authorities for a clear elucidation of the subject of the diagnosis of this malady, will be vain. * * *

"*Phenomena.*—Wood, Watson, Elliotson, and all other systematic writers on practice, so far as I have consulted, lay down the *affection of the gums* as an invariable symptom, a *sine qua non*, in scurvy. In this respect they are unquestionably wrong, and I hope the error which has been committed, will be corrected in succeeding editions of those valuable works; otherwise these high authorities may lead the practitioner into fatal blunders in some instances. The importance of this will be strikingly illustrated in the cases which the writer reports."

After giving a history of the malady and the most prominent theories, and expressing an admiration for that of Dr. Garrod, without endorsing it, he thinks that most of the peculiar symptoms of the malady can be explained on the supposition of a weakened condition of the coats of the capillaries by reason of the all-pervading lesion of nutrition present, and an impoverished state of the blood, by which the former are rendered incapable of retaining the latter. He thinks "the hemorrhagic tendency, ecchymoses and subcutaneous extravasations, the diarrhœa, compression of the brain occurring sometimes in the last stages of the disease, would appear to be owing to these causes; that the re-opening of old wounds is doubtless in consequence of the inferior organization of the capillary vessels in the parts that have been re-produced, in consequence of which they are the first to take on ulcerative inflammation."

The doctor reports a case that we should like to copy in full did space permit. It was judged typhoid fever in the outset by one physician, then rheumatism and purpura by two others, and finally scurvy by Dr. White, and cured by lemon-juice, oranges, a vegetable, fruit, and good meat broth dietary, after the lingering victim of a succession of diseases, so judged, and so prescribed for nosologically, was reduced to death's door. It was really a well-marked case of the so-called nursing sore mouth in aggravated form. "On the

tongue were several reddish circular spots, inflamed and sore, rendering mastication difficult and painful."

State of the Gums.—"No departure from a healthy state was discovered on a careful examination of the gums, no fetor of the breath observed."

Languor, rheumatic pains, debility, petechiæ, vibices, purpura patches, urticated crimson efflorescences on the skin, resembling erysipelas—fainting and swooning—suppuration of cervical gland—vomiting and purging, and *fetid*, bloody stools—low irritative fever—bloody expectoration—œdema and ulceration of legs—great emaciation—great epigastric distress—abdominal tenderness—cadaveric countenance—loss of appetite, were the ruling phenomena.

"For many days the patient lingered on in this melancholy and afflicted condition, almost sleepless, scarcely able in whispers to make known his necessary wants."

In six hours after the lemon-juice treatment was commenced the patient began to improve, and recovered rapidly.

Notwithstanding this, the doctors who were first in attend ance stood to it that it was not scurvy! we suppose because *the gums were not affected.*

"For several months prior to his attack, he had scarcely tasted any vegetables or fresh meats, his diet having consisted almost solely of bread and butter, bacon and coffee." This restricted diet was adopted on account of delicate health, and to prevent taking cholera.

Conclusions.—"Inasmuch as the experienced practitioners associated with the writer in the treatment of the case reported above, are still unable to concur with him in regard to its nature, and consider it [not tweedle-dee but tweedle-dum] purpura and rheumatism, it may be proper, in order to elucidate it more clearly, to analyse and enumerate the symptoms, recognized by numerous observers and writers as pathognomonic of scurvy, which demonstrate its true character, and also the circumstances favoring the development of that disease, and submit it to the judgment of the profession, if they be not wholly conclusive.

"They are as follows: 1. The age and sex of the patient [male 35], 2, and season of the year [spring]. 3. Constitu-

tional infirmity and predisposition evinced by the affection of a cervical gland. The significance of this symptom will be noted by referring to the account of Dr. Christison's cases. 4. The bloody discharges, violent discnteric symptoms, and epigastric disorder. 5. The state of the pulse. 6. The clean and moist tongue—similar reddish sore spots are not mentioned [by authors as symptoms of scurvy—yes, Dr. Good speaks of them]. 7. The general distress and cadaveric appearance. 8. The excessive fetor of the alvine discharges. 9. The tendency to syncope on rising, and muscular debility an early and prominent symptom. 10. The anæmic state of the skin, and coolness and dryness of the surface. 11. The retention of the mental faculties. 12. The erythematous or scarlet urticated appearance on the legs, probably the same mentioned as urticaria by one observer, and by Ritchie as an 'urticated crimson efflorescence.' 13. The ecchymoses or purple extravasations beneath the cuticle, thickly covering the legs, sore and painful, tending to ulceration. 14. The pains in the joints and œdema about the ankles. 15. The rapid convalescence from antiscorbutic remedies and regimen. 16. The character of the patient's diet nearly the same as in four-fifths of Curran's cases. In fine, almost every symptom, feature and phase of this case, from its origin throughout its entire course, were characteristic of scurvy.

"If it be objected that the usual pathognomonic symptoms, diseased gums, and their attendant fetid breath, are not in the list, it has been shown on the authority of Curran, Lind and others that even these are not invariably present. * *

"Regarded *a priori* all the causes, predisposing and exciting, constituting its complete etiology, are seen to be present.

"Viewed *a posteriori* the sudden cessation of the disease and convalescence on the use of the antiscorbutic remedies, the therapeutics of the case, establish its character.

"The numerous pathognomonic symptoms present, taken in connection with these, *a fortiori*, leave no room for doubt.

"This interesting case will doubtless be acknowledged, in several points of view, as a true type of that protean malady which a century ago wrought the most awful havoc among

the crews of Lord Anson's ships, in his remarkable expedition to the South Seas, of which the clerical writer, himself a familiar witness, relates. 'Its symptoms are inconstant and innumerable, and its progress and effects extremely irregular. It frequently puts on the form of other diseases, and is therefore not to be described by any infallible or exclusive criterions.'"

The British and Foreign Medico-Chirurgical Review on Scurvy.—Finally we must briefly serve to our readers the peculiar views and conclusions of the able Review of most of these late papers. We shall follow the Review, after his own arrangement.

The first position taken is, that the oldest authors charged scurvy to *errors of diet alone*, or almost entirely; that later, what we now call the *co-operating causes*, cold, damp air, moral depression, etc., were added: that this is the theory of the French school, and the theory that has been generally acquiesced in. Still, that there have not been wanting those who inclined to the first idea, that the want of fresh vegetables, alone caused it—Bachstrom, Rouppe, Trotter, Kerr, and Budd, cited as maintaining this view, which is stronger than the facts justify of Kerr certainly; and Lind says of Rouppe, "chiefly he ascribes the disease to a neglect of bodily exercise." See p. 270 of this volume.

He next examines what support the late outbreak of scurvy gives to these different views.

Dr. Christison's theory, that the want of nitrogen causes it, is examined and dissented from. Those who have adopted the vegetable-diet theory, he agrees with, as follows:—

"We are of opinion, then, that the correctness of Dr. Budd's opinion has met with additional support; and it may be confidently asserted, that an invariable antecedent of every case of scurvy is a deficiency or absolute want of *fresh* vegetable food. In the late outbreak of the disease, it appears in evidence that, in every case recorded by the writers whose papers appear at the head of our article, the use of fresh vegetables, and particularly of potatos, was much lessened or was altogether suspended. * * * The converse of this proposition, how-

ever, does not hold good; and it cannot be asserted that a want of fresh vegetables is invariably followed by scurvy."—(See p. 445 of the Review.)

But, *assuming* that the want of fresh vegetable nutriment is an *invariable antecedent*, (which our readers must now know is far from being the case, as Lind's cases show, See his Postscript,) he concludes it is the *only* invariable one, and adopts it as *a* vera causa of scurvy. The reason why it is *a* cause the Review has not shown.

He next argues the antiquity of scurvy, and shows it to have been known from Hippocrates' day to the present time, and that it is a malady of world-wide habitude; doubtless correct conclusions.

Then follows his analysis of the symptoms; from which he comes to the conclusion that little has been added by the late observations to enlarge our knowledge of the phenomena, or improve our method of cure. He exercises the authority of censor over Dr. Ritchie, however, as to what phenomena may or may not be counted scorbutic. After quoting the doctor's four varieties, see p. 300, he says:

"In this description the error [if one, we say] seems to be committed that has been charged so often against writers on scurvy, that of including all disorders of nutrition under that term as a generic head. Why, after all the care which Lind has taken [and failed] to affix the term scorbutus only to cases marked by a certain determinate and peculiar concatenation of symptoms, viz.: swollen gums, [which the Review has shown by Fauvel not pathognomonic,] petechiæ and ecchymoses, should any one, by a want of discrimination, or by a wish to simplify and generalize in a *higher degree than the facts will bear*, describe, *as in the above extract*, cases obviously the result of *deranged* [unmeaning term] nutritive action different from that which leads to scurvy under *the name* of this disease, [but not aside from its nature?"]

After this censure for describing as scurvy that which the facts would not warrant, *in his opinion*, formed without having seen the cases, he pats him on the shoulder, and says, "We trust Dr. Ritchie will not think our remarks unnecessary and hypercritical; we would call to his remembrance the great

errors which Eugalenus introduced into this subject by confounding so many diseases with scurvy, and the severe condemnation which he has consequently received from subsequent writers [Lind]. All our great authors [who?] have, of late years, touched on this subject, and entered a protest against the application of the term scurvy beyond its legitimate [what is that?] province. Even Sydenham, who himself has an allusion on this point, has been blamed [unjustly] for describing a scorbutic rheumatism; and J. P. Frank is censured by Fodéré [unjustly doubtless] for believing he had treated a true scorbutic fever, simply because epistaxis and [purpura] patches on the skin were common symptoms. If we once stretch the use of the term, what is to prevent us from going back to the divisions of Willis, or to the twenty-six varieties detailed by old [polite adjective] Gideon Harvey?"

The truth is, there is no half-way house: but this censure is based not on an appeal to *reason*, but to *authority!* After all the pains that Lind took to make scurvy a uniform disease, he entirely and utterly failed, as all who have followed us in our researches have seen. He gave it up in sundry instances that *the gums were not affected*—and after calling nearly the whole catalogue of diseases scorbutic, he pronounced cases which others called low petechial fevers, "*altogether* scorbutic." But this appeal to authority in the Review's argument will better be appreciated by copying the language of the same No. of the Review at p. 288, analysis of Dr. Ware's Address on Medical Education.

"Whatever estimate we form of our own merits, however, we must not expect society at large to view them in the same light, until some established system of medical philosophy can be presented, which shall have, in its definiteness, its completeness, and in the universality of its applications, the same kind of claim to general assent as that which is conceded on all hands to the Newtonian physics. *The present is a sort of transition-period in our history. The old claims of authority, —which have held by us, and by which we have ourselves held much longer than many of us are aware of—are rapidly losing their influence; and far be it from us to attempt to revive them.*"

We say an appeal to authority, if that authority be truthful, is good; if fallacious, good for nothing; and we have shown Lind's diagnosis of scurvy appealed to, a fallacy; Sydenham's also; and our readers must judge how censurable he was for holding that there was a variety of rheumatism of scorbutic nature, for we have placed it before them, and presume they know that the lemon-juice treatment has lately been revived as the most successful treatment of rheumatism. But the Review, almost in the same breath, with which he censures Dr. Ritchie; suggests that Dr. Foltz's cases characterized by severe heart and chest symptoms, were "*scorbutic pericarditis and pleurisy*," and makes a note calling attention to *scurvy* as a cause of them, and refers to Seidlitz's cases, given by us at page 122 of this volume—see p. 450 of the Review. He also says, "Dr. Anderson, of Glasgow, reports a case of *scorbutic amaurosis*."

Thus, it is plain that scurvy has no existence *per se*, or as one disease that may be measured by a group of symptoms, but that its epiphenomena comprehend all the symptoms of all so-called diseases, or groups; and the Review might as well adopt this philosophy in every instance, as in two or three. In calling pericarditis and pleurisy scorbutus, he has laid himself liable to twice the amount of censure he would attach to Dr. Ritchie or to Dr. Sydenham. But the argument and documents are before our readers, let them judge. Assuming it to be an error to call all the disorders of nutrition scurvy, does not prove it to be one. It is a good skulking ground, however, because the whole matter is involved in utter obscurity or total darkness, as regards all the primary pathologies of "all the disorders of nutrition" so-claimed, except the scorbutic diathesis. The appeal, then, is to blind authority and hypothesis, not to reason and fact.

The Review, then, enters into the subject of the pathology of the blood at much length; states that the old theory, the want of fibrin and the dissolved or putrid state, have been shown by Mr. Busk, M. Andral, M. Stœber, Parmentier, Deyeax; and more recently by Becquerel and Rodier, Chatin and Bouvier, Marechal, Frick. and others, to be incorrect, and sums up the results as follows:

"The general results of the analyses lately made of scorbutic blood, may be shortly [briefly] given as follows:

"1. The specific gravity of the defibrinised blood was slightly below the average. The average of Becquerel and Rodier's observations on old women of the average age of 72, makes it 1047·28; the lowest number is 1038·3; the highest 1051·7. In the case of MM. Chatin and Bouvier, it was 1·060.

"2. The specific gravity of the serum in two of Mr. Busk's cases in young men, was 1·028, and 1·025. In four of the cases of MM. Becquerel and Rodier, the average was 1024·3; the lowest 1020·8, the highest 1025·5. It is therefore also below the average, particularly in Becquerel's observations, which were made on old women.

"3. MM. Chatin and Bouvier noticed a slight increase of alkalinity.* Becquerel states that it is inconstant.†

"4. In two of Busk's cases, and in one of Fauvel's, the clot was buffed and cupped.

"5. Chatin and Bouvier under the microscope observed no appreciable alterations in the figure of the red or the white corpuscles. Dr. Ritchie thinks they were more irregular in outline, and more flattened than usual; we doubt whether irregularity of outline is an important change.

"6. The fibrin was in normal or increased quantity, in all but one of the analyses. Mr. Busk's three cases gave 6·5, 4·5, and 5·9 parts in the 1000. The blood of a healthy man analysed in the same way, gave 3·3 parts in the 1000. Becquerel and Rodier's cases make the average rather lower, viz., 3·1 in the 1000; the highest is 4·1, the lowest 2·2. Chatin and Bouvier's analysis gives 4 parts in the 1000 as the amount of fibrin.

"Frick's‡ single case makes it 4·204. Andral's second

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* Journal de Chimie Medicale, Mars, 1848, p. 141; Comptes Rendus, Fevrier, 1848, p. 171.

† Gazette Medicale, 1847, 513–14.

‡ American Journal of the Medical Sciences, Jan. 1848, pp. 33–4. In the same table, Frick gives the analyses of two cases of purpura hemorrhagica. We have excluded these, as we are quite certain that scurvy and purpura are quite distinct diseases, and possess symptoms absolutely

case, in which, however, there were inflammatory symptoms, afforded 4·20 per 1000.* Dr. Ritchie's case gave only 1·106 of fibrin per 1000. It was analysed by Dr. R. D. Thomson.†

"7. In all the analyses the proportion of red particles was much diminished. In Busk's cases it descended as low as 47·8, 72·3, and 60·7 in the 1000, being as much reduced as in intense anæmia. Becquerel and Rodier's average is above any of these numbers, being 86·28, which is within the range of the limits of healthy female blood. The observations of Chatin and Bouvier, gave 86·3 per 1000, which is 24 or 30 parts below the minimum of the healthy-range in men. Andral's second case gave the lowest amount yet recorded, viz., 44·4000 per 1000. Frick's analysis gave 117·078, being the highest of all the cases.

"8. The albumen, as far as quantity is concerned, appears less altered. Busk's analyses gave 84, 76·6, and 74·2 parts in the 1000. Becquerel and Rodier's average of the organic matters of the serum, is 64·3 in 1000 parts of blood, but this includes about 2 parts per 1000 of fats. Chatin and Bouvier's examinations gave 62·3 per 1000. In Frick's case the solids of the serum were 87·045 parts in 1000 of blood which would give about 77·5 of albumen, being nearly the normal rate.

"9. The quantity of the salts has not yet been accurately determined; it has been given at both above and below the standard. Chatin and Bouvier found 16·3 parts per 1000 of soluble non-coagulable principles. Busk's three cases gave 9·5, 11·5, and 10·9 parts of salts per 1000. Becquerel and Rodier's average is 6·7 parts per 1000, which is below their own healthy standard, and that of Lecanu, Nasse, and Andral.

"Frick gives the following numbers; iron, ·721 per 1000

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pathognomonic. With this, all who have seen the true "morbus maculosus Werlhofii," will at once agree. We regret much that our limits will not permit us to enter on the question of their resemblances and differences. [An African is not a Caucasian, all will agree; and, with all their differences, the two are still homo.]

* Gazette Medicale, 1847, p. 534.

† In Dr. Ritchie's analyses, the globules and albumem in one case, and all the organic constituents in the other, are clubbed together, so that we have been unable to use them.

parts of blood; lime, ·110; chlorides, 6·846; and phosphates 1·126 per 1000. The quantity of iron is thus above the standard; and on carrying out the calculation to determine the proportion of iron to 127 parts of globules, Frick found it ·782, which is also above the normal quantity.

"Becquerel noticed, on the contrary, that the iron appeared to be diminished. In his five analyses it is represented by the figures, 0·522, 0·277, 0·391, 0·427, and 0·290, giving a mean of 0·381, while the normal standard in women is 0·5. In Dr. Ritchie's two analyses, the salts are given as 6·44, and 6·820 per 1000.

"10. The quantity of water is of course increased in all the analyses. In Mr. Busk's three cases it is 849·9, 835·9 and 834·2 parts in 1000; while his method of analyses gave, for healthy blood, 788·8 parts. In Becquerel's five cases it is 810·9, 813·7, 807·7, 811, and 854·4; while the normal standard given by his method is 780 parts in 1000. Chatin and Bouvier state the water and loss at 831·1, and Frick at 791·69 per 1000 parts.

"With regard to the existence or quantity of other matters in the blood, such as urea, uric acid, kreatine, etc., none of the analyses speak.

"It is not easy to draw an average from these analyses; some were in old women, others in young men; they were performed in various ways; and in several, two or more ingredients are clubbed together. But with the view of being as definite as possible, we may give the following as an approximate average of scorbutic blood in all ages in both sexes, and at all periods of the disease; water, 830·25; fibrin, 4·214; red particles, 80; albumen, 73·15; salts, 9·336; fats, extractives, etc., 3·050. But this average must be considered as not having any claims to great accuracy.

"Any general results from the above analyses must be drawn with great caution; the facts are few in number, and the discrepancies of statement are great and obvious. But it seems clear that diminution in the quantity of fibrin forms no part of scurvy, and that the disease may exist in the greatest intensity when this component is much above the standard. The very varying proportion of fibrin, on the

other hand, forbids the supposition that the disease is connected with its increase; occasionally the fibrin has been certainly below the standard, with coincident severe symptoms, and on several occasions it has been in its natural quantity. Besides, augmentation of the fibrin occurs every day in inflammations, without giving rise to scorbutic symptoms. [Inflammation is an evidence of a primary and general dyscrasia, according to Rokitansky, and until some other primary pathology than *scorbutus* is positively shown, we hold it philosophic and just to impute it to this, and to this alone. No one has ever before us, assigned the *cause* of inflammation.] Becquerel appears to attach very little importance to this condition, and Marchal* does not hesitate to affirm that we are to look to the reactions of the tissues irritated by the effused blood, and to the latent inflammations so common in scurvy, but not proper to it [theoretically], as the reasons why the fibrin is kept at its normal figure or is augmented above this.

"The change in the quantity of corpuscles appears to be a more constant occurrence. In every case the quantity is so greatly lessened, even in cases where there have been no external hemorrhages, or very slight ones, that, taken with the color of the skin, and the dark color of the blood so much dwelt upon by the old writers, it seems a most plausible supposition that it is in the composition of these bodies that some important change is to be found. Under the microscope their outline appears normal, and their component iron is perhaps not much changed, as it has been found in diminished quantity by one, and in augmented quantity by another observer. It is obvious that the lessening of the quantity of globules will [always increase the effete fibrin, call it what you please] not produce scurvy; otherwise, in anæmia, scorbutic symptoms should be present, whereas they are hardly ever [always] seen, and never [always] in consequence merely of the causes of anæmia."

Pale and contracted gums, the initial sign of scurvy, characterises every case of anæmia, and in many the dental marginal line, tending to disorganization may be seen.

* Archives, Generales, Septembre, 1847, p. 122.

"The other components of the blood have not yet been sufficiently studied; the salts are augmented in some analyses and diminished in others; so that if we may draw any conclusion at present, it would be that their varying proportion plays no important part."

Where the salts are not afforded in the dietary they must, if present, be derived from the wasting tissues, and thus play the truthful part of being effete, whatever be their proportion: this, chemistry has not reached, but induction has.

"If we accept the above results, or at least such of them as may be considered most certain—viz., a trifling augmentation of the fibrin, a considerable lessening of the red particles, a normal ratio of albumen and salts—as the only ones which we are to receive from chemistry, we cannot perceive that our knowledge of the pathology of scurvy has been much increased thereby. All these changes may be, and indeed often are, present, separately and collectively, and yet there are no symptoms of [so-called but misunderstood] scurvy. Nor do these changes help us to explain in any way the phenomena of the disease; the peculiar change of color in the skin, the effusions of blood, exudation-matter, and serum, the interruption to the circulation evidenced in the lowered temperature, and the slow, feeble, impeded pulse, all symptoms which are referable to the blood, and not to any change in the vessels, as will be presently shown, are not to be explained by any observations which have reference merely to the quantity and ratio of the components of the blood."

The want of *fresh* elements explains all these phenomena, we think. Neither the normal ratio of the proximate principles, nor *their* proper *quality* can exist without them.

"This explanation has been already tried, and it has failed; in the fibrin and red particles, Andral sought to find the physical reason of hemorrhages. The first observation made after the enunciation of the theory, scattered it to the winds. Plausible as it seemed to be, it was incorrect; and its fate has taught us once more, that which experience is ever repeating, that the most ingenious theory should be mistrusted when its chief support is derived, not from facts and observed phenomena, but from its accidental agreement with our pre-

vious hypotheses and prejudices, those cherished "idola," with which, in the infancy of science, the observer has to wage continual war [exactly so].

"Apparently, then, the examination of the blood has so far been serviceable, rather by clearing away old errors, than by establishing new truths. * * *

"The few scattered observations which have been yet made known, of difference of composition accompanying change in quantity, such as the buffy coat being more highly oxidized than healthy fibrin, and facts of the like kind, do not at present aid us much in this inquiry. But as far as scurvy is concerned, a good beginning has been made by Chatin and Bouvier, who have observed two facts, which, if confirmed, will prove of great importance.

"They noted that the albumen of the blood in their case of scurvy did not coagulate under a temperature of + 74° Cent., or 165·2 Fahr.,* whereas the usual temperature, with an equal quantity of healthy albumen, would be from 5 to 8° Fahr. below this. So that, although the albumen did not appear much altered in quantity, in this as in other cases of scurvy, it had undergone some change requiring further investigation, but which appeared to have increased its solubility.

"Chatin and Bouvier also noticed that the 'force of cohesion of the fibrin' was diminished so much, that they were almost unable to isolate it thoroughly from the red globules; or to use the words of the reporter of the 'Comptes Rendus,' the 'plasticity' of the fibrin was lessened. * * *

"We may indeed here remark, that in practical medicine, all analyses of the blood, even as to *quantity* only of the component parts, are to be received with great limitation. They are all vitiated by certain assumptions, such as the estimate of the fluid of the red and white particles with the serum, and they are performed in a manner comparatively rude and objectionable. The discordancies of chemists, even as to healthy blood, are so great as to prove to us either that the ingredients can vary considerably without losing the standard of

* Comptes Rendus, Fevrier, 1848, p. 171; ou Journal de Chimie Medicale, Mars, 1848, p. 144

health, or that some such differences of properties, as those to which we have just referred, [the chemical composition of the proximate principles,] interfere with the uniformity of the analyses. * * * * * *

"Taking all these circumstances into consideration, the difficulties of even coarsely analysing healthy blood, the discrepancies and contradictory statements thence arising, and bearing in mind that in scurvy there are not above a dozen analyses that can be depended upon, and that even these differ among themselves, we are forced to the opinion that chemistry has been as yet chiefly of advantage in negation rather than in affirmation. And when we also remember that the most difficult part of the analysis of the blood,—the question whether the several ingredients vary not only in their relative proportions to each other, but in their absolute ultimate composition,—has not yet been even touched by chemists, [neither what proportion fresh and what effete,] and that this is necessary, before the pathology of a disease can be discussed, we shall see cause for believing that a more advanced chemical investigation is necessary before we can understand the different phases between the action of the cause and the external phenomena by which it is indicated. And yet even in what has been already done by chemistry, we have made a great advance; the ground has been cleared of obstacles and superstitions; the pathway is open for those who can walk in it; the goal can be discerned, although still overshadowed by the obscurities of distance and space."

In order to judge truthfully whether these, the Review's conclusions are correct, he returns once more to the dietary—to a re-examination of the different hypotheses assumed by the writers to be the cause of scurvy, that is, a deficiency of nitrogen, potash, sulphur, etc. Previously, however, he prepares the reader by a recital of what he calls *elementary facts*, in the history of scurvy, asserting,

1. That scurvy does not arise from any primary affection of the digestive organs. An error, for it often does; dyspepsia is an early stage, or form.

2. Neither in deranged assimilation, as the scorbutic are more generally fat, showing there is no want of nutritive

power. Another error; it often arises from a want of nutritive energy, as in Lind's cases, living on the best of food and in the purest air.

3. That there is no weakness or want of tone in the capillaries. Another error, for he had just shown the cohesive forces between the constituents of the blood very much lessened, and every physiologist knows that as the fluids are, so, and so only are the solids.

4. "The freedom of the nervous system in all its parts from anything more than an exceptional manifestation of altered function [!]." When the stoutest hearts are melted to tears under it continually, many take on insanity. and some raving madness, this is seen also to be an error.

5. Finally, that scurvy is cured with the greatest facility, the most grave cases, without leaving any injury done the constitution!—that the blood and blood only is at fault! But Lind says there was always a proportion of cases in Haslar hospital that could not be recovered—that the injury done the constitution was always great—and again we oppose to this error the physiological truth, before stated, that as the fluids, so, and so only are the solids; the merest tyro in physiology knows this, it is the first and last lesson in humoral pathology. The theories of the blood derangements as causing scurvy, are then briefly considered, as follows:

As to the question, what ingredient is wanting, analysis having *settled nothing*, we have to reason out the matter, by the diet causing it, and the diet remedying it. Thinks it a waste of time to stop to refute the opinion that scurvy is a manifestation of impaired nutrition induced by *any kind of insufficient or unwholesome food*—the very thing he could not refute—but says if this were the case, scurvy would be much more common than it is.

Dr. Christison's nitrogen theory is again argued over, and ignored, and the want of vegetables shown to be coincident with the want of milk; Dr. Garrod's potash theory is then brought up and examined with Dr. Aldridge's more extended one, of the same nature, but both are ignored, because he cannot see the use of little quantities of potash, sulphur, etc., and more especially because the citric acid treatment, which

he assumes, contrary to the facts, will *always* cure scurvy, contains neither potash, soda, sulphur, or other organic salts of vegetables. But the data show that citric acid sometimes failed, and that though *efficacious*, (doubtless as we have suggested by revivifying the old bases in the road of excretion,) it is not a specific, and that his conclusions are not infallible—he says:

"We cannot conceive that anything can be more convincing than the above evidence; the efficacy of citric acid is clearly proved, and the nitrate of potash is evidently inferior to it in power. It is incontrovertible, therefore, that scurvy may be cured without potash, more rapidly than with. This appears to us completely to upset Dr. Garrod's theory, as well as, for other reasons, it overturns the opinions of Drs. Aldridge and Christison."

He thinks the virtues of antiscorbutic diets lie in the *acids* of vegetables and fruits, more especially than in their *basic* principles, which is only reviving the old theory of Dr. Trotter, for the acid properties of vegetables depend wholly on oxygen. Finally he sums up his conclusions in the following words:

"To sum up our conclusions: We have not a doubt that the whole bearing of the facts we have brought forward, tends to this conclusion,—that true scurvy is caused by a deficient supply of the organic vegetable acids, or salts of fresh vegetables [here he should have stopped, for in these are contained all the elements of the tissues]. This has long been the prevalent opinion in this country, and it has by far the strongest arguments in its favor. Whether occasionally the absence of potash or of sulphur (which we have no doubt produces its own peculiar symptoms, although these are not [how know? there are no data] what we term scorbutic), may not occasionally aid in the development, we shall not decide. The peculiar forms of [scorbutic] dyspepsia which may, however, result from such a deficiency, are deserving of the deepest study.

"Nor shall we attempt to determine how the organic vegetable acids act [as chemical agents—resulting in nutrient particles added to, and effete matters eliminated from the system].

We have little doubt that it is by virtue of some decomposition which they undergo. Trotter long ago remarked, that their utility seemed to be measured by their facility of decomposition. But whether, when decomposed, they supply constituent materials to the fibrin, red particles, or albumen of the blood [to all], or whether they exert, as Dr. Anderson has surmised, some catalytic power, which promotes the assimilation of the nutritive part of the food, [what is that part if not potash, sulphur, lime, soda, carbon, etc.?] an action which may be compared to the effect of iron in anæmia, we cannot undertake to say. Nitre may undergo some similar decomposition in the cases where it proves useful.

"We are really sorry that our critical duty will not allow us to accord with the hypotheses, so well put and so forcibly urged by Aldridge and Garrod. It would have been a great step if we could have done so, [the want of seeing far enough only prevented;] but, until they disprove our facts, and bring a great many more of their own to back their opinions, we must refuse our assent.

"We observe that Dr. Williams, in his very excellent 'Principles of Medicine,' has passed over the subject of scurvy, as being too little known to be advantageously discussed.* [This is sensible in Dr. Williams, for scurvy covers all—to give the pathology of scurvy would be to duplicate his work, *provided* he is all right on its parts.] But from this opinion we must dissent. We know as much of scurvy as of most diseases. We know its cause [very indefinitely according to the Review]; we have traced its distinctive symptoms; we can cure it at once [not all cases], if we can procure the necessary remedies. What more do we know of small-pox or of scarlatina? We know that the cause is a specific poison; [was such the cause of the first case?] we are certain when that cause is acting, by peculiar signs [not in the forming stage]; experience has taught us how best to manage the disease and the accidents most prone to occur during its course. But of the internal changes in the blood

* Principles of Medicine, etc. By Charles J. B. Williams, M. D. F. R. S., etc. London, 1848. Appendix, p. 515.

and tissues induced by the poison of small-pox, and evidenced by the external signs, we know no more than of the internal changes occurring in scurvy [they are the same, obstructed nutrition]; not even so much, for chemistry has been more active in one than the other case. In both cases, chemistry, assisted by the clinical observation of the physician, and guided, as it were, by his knowledge of the progress of disease, derived from countless observations, is the science to which medicine must apply for many facts necessary to deduce the pathology of certain affections. Chemistry has already done something for us in even the very few analyses of scorbutic blood which have been made. We have in them an earnest and a proof that more will yet be done, and that, if we are cautious in restricting chemistry to its legitimate province, the greatest benefit will result from its employment in the investigation of disease."

Thus, we have carefully presented the main arguments and conclusions of this elaborate criticism upon most of the contributions to the literature of scurvy which the pestilential period that produced the Irish famine brought forth. The position the Review holds in the medical world and the ability manifested to compass this whole subject, seems to have left the impression that this paper was to be regarded as an ultimatum, or final decision, settling the dogmas as if by authority, or the *ultima thule* of professional knowledge on the pathology of scorbutus. We look upon it as a very able and valuable paper, but consider its *acid theory* of scurvy but an extension of Trotter's, and no better than Macbride's, Dr. Christison's and others. Besides, we have pointed out many errors and fallacious conclusions in it. We think they are owing to the false stand-point from which the subject has been viewed. Chemistry has been expected to reveal a something, a condition of blood pathognomonic of scurvy, and its success here to be the measure of its looked-for service in two hundred and fifty and more so-considered other diseases; when the truth is, there is but one disease, or one primary pathology passing into different stages, in which the blood will differ of course. The discrepancies and short-comings of the analyses complained of, are the strongest arguments that could be adduced

in proof of this. Chemistry being an exact science, cannot be made to sustain false theories and hypotheses, though they be as old as Hippocrates and endorsed by the whole profession. Analysis has done but little as yet, for the difficulties are great. Induction must, for the present, be our chief reliance. Chemistry has furnished us with a knowledge of the elements of the tissues, and the elements of food, as data. Under scorbutic diets we know the elements are not all afforded, and further that the *quality* is bad. We know, the elements must be derived from *organized* matter—the vegetable and animal kingdoms—to be right. Chemicals can never equal the natural combinations as elaborated in vegetables, though evidently highly useful and medicinal. Here the Review is entirely at fault. We know inductively that *all* the elements are *equally* necessary; a whole cannot be produced, and re-produced by a moiety of its ingredients. We know why animal food is less efficacious in preventing scurvy than vegetable food; that it is because the salts of the alkaline, earthy, and mineral bases are less abundant in it, and come to us sparingly; and if a blight in vegetation prevail, the animals are scorbutic; the milk, butter and cheese also. We know too that all the salts of the tissues are contained in healthy milk, a healthy egg, and healthy blood, although we do not know the exact proportions of the formulæ, (here chemistry has failed,) but we know the elements must all exist there. We infer the formula for fibrin is different from that for albumen, serum, or the red corpuscles, though they may be isomeric so far as chemistry shall ever be able to reveal. A difference in the proportions of the equivalents of like chemical compounds, found in the vegetable proximates, though isomeric so far as chemistry has yet revealed, doubtless gives them their difference in sensible properties. Thus we know by induction the necessary, if not precise constitution of the proximate principles of the blood, and of the solids. And it does appear to us that we know also, what Rokitansky indicates should be the aim to know, "the precise character of the impairment suffered by the proximate principles of the blood," as causative of disease, viz., a want of the fresh elements in them of which the tissues are composed, nourished, repaired. The want of one or more of the elements

we know must *inevitably*, induce a supervening pathological condition—primary pathology. Whether the want of one element alone, under a perfect supply of all the rest, as for instance the total absence of lime, would, in every case, produce the epiphenomena of rickets, caries, and other forms of disease of the bones, or various other forms of disease, as general fever, etc., expressive of the general want felt in the proximate elements out of which the bony tissue is a product, it is impossible to say, because we have no data from which to draw inductive conclusions. Our single individual opinion would be that some general expression would often be given, and that this would vary in different constitutions and under different surroundings as to exciting causes. The admission by the Review that the absense of potash or of sulphur alone *may* aid in developing scurvy, is as far as any one can safely go, perhaps, if scurvy is viewed from his stand-point, as one uniform manifestation of disease among two hundred and fifty others, (of which our readers must judge, having all authorities on the subject before them,) but there is no uncertainty about *a* pathological condition ensuing, and this *primary*, where the subject was before healthy, and *all* else perfectly right. The *total* want of one or of more fresh elements, then, or an *insufficiency* of one or more, or all, is the *precise impairment* suffered by the proximate elements in primary pathology, call it by what name you please the scorbutic, scrofulous, cancerous, rheumatic, gouty, or calculous diathesis, these being the principal ones. The data for deciding this, all point to scorbutus, viz., the objective signs of it in fasting orders, and starvlings. There are no data that point to any other diathesis as primary, and the whole data of the Irish famine point to this *precise impairment*, defective and insufficient nutrition, not only as the cause of scurvy, but of all other diseases. The scorbutic diathesis, then, stands proved primary pathology.

As to the assumption of the Review, that there is a "nutritive part of the food" independent of the organic elements derived from vegetables, which their decomposition may catalyse into the gears of assimilation, an "action which may be compared to the effect of iron in anæmia," the mere mention of it is sufficient to show how vague were the ideas of the

writer as to what constitutes the nutrition of food, and the action of the nutrient salts. This vagueness of philosophic knowledge here advanced, in this most practical of all physiological inquiries, is not peculiar either to the Review, it is pretty general. Hitherto the compounds of lime, potash, soda, iron, phosphorus, sulphur, chlorine, etc., seem not to have been considered nutritive parts of man's food, but rather foreign bodies, somewhat akin to chips in porridge, and only the nitrogenous parts nutritive, except by some few who very justly regard those chemicals as food, for they are so as truly as the gases, oxygen, hydrogen, carbon, and nitrogen: their remedial effects prove them so. No advance, that we see, can be made on the definition of food given by Blane, viz.: materials containing the elements of the tissues of which the human body is composed, in form sufficiently attenuated to afford the necessary stimulus of distension; except this one condition, viz.: it must be derived from the organized kingdoms: this is imperative. This, doubtless, is the reason why the vegetable acids are so much more remedial than the mineral, and why lemon-juice (the acid citrate of potash) is more remedial than citric acid.

Viewed from the stand-point, then, from which we view scurvy, the "negative results" of the analyses become positive. The diminished specific gravity of the blood; the lessened proportion of the clot to the serum, and particularly of the red corpuscles, the highest developed proximate; the lessened cohesive attraction between the proximate principles, and lessened affinity between the elements composing the proximates, are so many positive evidences of the predominance of effete ingredients present, and the want of fresh, healthy elements. These evidences are made more certain by the universal testimony of all writers, that a dietary not affording fresh elements is productive of scurvy; and further, by the no less universal agreement as to the remedial efficacy of fresh vegetable succulents which contain all the elements of the tissues. Precisely the same condition is seen in the more solid tissues of the body, as in the so-called fluids. The debility, ecchymoses, petechiæ, hemorrhages, exudates of effete fibrin and serum, gravitation of these effete

fluids to the depending portions of the body, ulcerations, local inflammations, etc., sufficiently testify to this. All forms of disease are aped. All their symptoms either grouped or individually manifested in the different stages of this malady, and when the causes that produce this diathesis become general, active, and prolonged, then a perfect chaos of two hundred and fifty so-considered other diseases; or as the Review holds, "all disorders of nutritition" are rife, and in order to heal them successfully, all practitioners have then to be governed by the Sydenham law, of treating all as if clothed in one uniform livery. Now, when this matter is looked in the face, lighted up by the phenomena of the Irish famine and the literature of the old authors, which philosophy bears the impress of truth, ours or the old? is the scorbutic diathesis at the bottom of all, or are there two or three hundred other primary pathologies? which is the more probable under the worldful of positive testimony that the scorbutic pathology or diathesis, is idiopathic, and not the first solitary word of evidence that any other so-thought disease, dyscrasia, or diathesis, is idiopathic—nothing but hypothesis?

The subject is capable of further elucidation, by exposing the fallacy of this skulking-ground—"all disorders of nutrition"—assumed by the Review to be conditions essentially different from the scorbutic state. This is medical orthodoxy, however. The profession almost universally entertain this view. But it means no more than the fallacious phrase "epidemic influence," nor than the as universally endorsed hypothesis, "malaria." All are but cloaks for ignorance, that medical philosophers will gladly lay aside when plain truth rends them in tatters. Let us analyse this phrase, "all disorders of nutrition." It was shown, under the head of Definitions of Disease, that all diseases are held to arise from "diseased nutrition." Nutrition *diseased*, the cause of all diseases! is anybody any wiser for this skulk, this lucid revelation, that disease is the cause of diseases? not a whit. It sounds well, notwithstanding, and there is truth involved in the proposition, when fairly understood to mean this, viz.: that "diseased nutrition" is *primary pathology*. But, what *causes* nutrition to be primarily "diseased," or, (as diagramed

in the next bracket, see vol. ii. p. 20,) "perverted?" Nobody knows; but the *hypothesis* is, that "occult qualities in the air," "malaria," "epidemic influence," etc., are the causes. "Diseased nutrition," "perverted nutrition," "deranged assimilation," "all disorders of nutrition," mean the same thing, then, viz.: *primary pathology*, which is impaired nutrition, and this the *scorbutic diathesis;* and "the precise nature of the impairment" of nutrition is now unfolded, viz.: a want of fresh elements and an accumulation of the effete, by which assimilation and elimination are thwarted, and poverty of the blood and debility of the solids ensue. This is primary pathology, and there is no other. This is "all disorders of nutrition," no matter what the epiphenomena may be, for anything that hinders, obstructs, or impairs the nutritive process brings on this primary result necessarily, undeviatingly, and unequivocally; and this condition is the scorbutic diathesis. The data for these inductions we have presented, and the conclusions are irresistible. *The scorbutic state, then, is "diseased nutrition," and the primary form thereof*, and "all disorders of nutrition" other than this, are but assumed. And, until each one of the three hundred assumed "disorders of nutrition" is proved to exist, to be otherwise primary, and as originating from some other source, origin, or cause than the causes that produce the scorbutic state, it seems to us unphilosophic to regard the term in any other light than a slang-phrase, or convenient skulking-ground where ignorance may hide.

But we must draw to a close. Unfinished as our discussions or our researches may be; imperfectly as we may have enforced our doctrines; nevertheless, we must come to a close. Not that the subject is exhausted: not at all; it freshens at every step, and is, indeed, but just fairly opened. But, we have already considerably transcended our proposed limits, and with gratitude to a kind Providence for the preservation of life, and the blessing of adequate health for the accomplishment of our labors, we must here take leave of our readers with a final remark or two.

CONCLUSION.

It is deemed quite unnecessary in closing, to set forth a summary of the new doctrines contained in these Researches: the attentive reader will have encountered and considered them; and no seeker after truth will be startled by their novelty, or will suffer his prejudices to rise in opposition because they clash with old theories, dogmas, and hypotheses. A spirit of free inquiry is the characteristic of this age, and in the fullest and freest exercise of this liberty an American citizen will surely be tolerated. A progress made in first principles is the progress in medical science this age demands. Practical medicine is, as yet, without its alphabet of first principles entitling it to be ranked among the exact sciences. This is the source, the cause, the foundation, and the life of the broad-cast quackery that abounds; the only reason of the discordant theories and opposite systems of practice that uphold mystery, beget odium, and render practice a trade, in which the honest and most enlightened often fail, and the ignorant, but cunning, frequently succeed.

The great error, it appears to us, lies in assuming that groups of symptoms constitute diseases, and from this false stand-point jumping to the conclusion that remedies cure by their Antipathic, Homœopathic, or Allopathic action, the three so-called "fundamental methods," but rather should be called fundamental fallacies, for each looks to symptoms alone for the indication; when it is as clear as the unclouded noon-day, that symptoms are only effects, and that the removal of their *cause* is the only true indication, the only true therapeutic aim.

The inflammations, the exanthematous and other fevers of the sthenic type are among the early modes or first methods set up to get rid of the excess of effete fibrin, and other waste elements, in slight, recent, beginning, or declining manifestations of the scorbutic diathesis, under powerful exciting causes, a great amount of life-force being present. On the matter of susceptibility to disease, our view is, that nobody is clear of some degree of latent scorbutus. If the effete elements or waste of the tissues could be disposed of and exone-

rated from the system without being returned into the blood-vessels, and a perfect dietary always supplied, we might begin to look for purity, health, and entire exemption from any scorbutic taint, but as the case stands, and ever will stand, the seeds of scorbutus are forever in us, even the most healthy.

It is marvellous that the acute mind of Broussais should have rested his first principles on effects, those "intractable irritations and inflammations" that were with him the alpha and omega of disease, and considered it vain and useless to search for their cause, when it is as clear as the unclouded noon-day that want of fresh elements, or impaired nutrition is that cause.

It is equally marvellous that the philosophic mind of Rush should have reasoned out the Unity of disease, and rested satisfied of its truth without ever reaching its rationale in a one primary dyscrasia, viz.: the natural scorbutic impoverishment of the blood that uniformly results from impaired nutrition, however produced, whether by want of the elements in the food, or obstruction to the process by solar heat, winter's cold, sudden vicissitudes, moral depression, or otherwise.

It is no less marvellous that the whole profession should hold to the doctrine of "diseased or "perverted nutrition" being the starting-point of all disease, without considering it one dyscrasia instead of three hundred; without referring "all disorders of nutrition" to the only known and proved general, primary, and natural dyscrasia, the scorbutic diathesis—poverty and want of nutrition—however induced, whether by starvation, gluttony, or otherwise.

It is to be regarded as equally or more marvellous, perhaps, that Rokitansky, while beholding and promulging the great truth that all diseases originate in a general dyscrasia unfitting the blood for the service of nutrition, should not have seen that that dyscrasia was a want of fresh, and a surplus of effete elements in the blood, abridging and hindering nutrition; that this was the precise impairment which the proximate principles of the blood suffered; brought about or caused by defective alimentation, aeration, and calorification.

Nor does the marvel end here: it is no less marvellous

that all observers should hold to errors in diet, and the want of fresh vegetables especially, being the cause of scurvy, without a more searching inquiry into the question, what constitutes the nutrition of food; and that from the data which the analyses of the animal tissues and of food have afforded, they should not have reasoned out the cause of scurvy, as lying in abridged and impaired nutrition through the want of fresh elements.

It is just as marvellous, too, that with all the data before them of the protean character of scurvy, the profession should have so long contended for its singleness of cause and essential difference in nature from other imagined and nosologically arranged diseases.

Nor is it less marvellous that the ideal theory that holds to the idiopathic origin of two or three hundred supposed essentially different diseases, should have prevailed over the real fact of the unity and essentially same nature of all disease, particularly when all history bears testimony to the uniformity of the first symptoms, and nobody can tell what is to turn up until some new epiphenomena present as consequences, mere tail-ends of the story, which human invention for want of light has seen fit to call diseases.

The doctrine of the unity and scorbutic pathology of disease is a great truth, or a very great fallacy. We hold that no fallacy can possibly marshall so many facts to its support as we have brought forward. If true, it upsets the hypotheses of malaria, zymosis, epidemic influence, occult qualities in the air, etc., as causing disease; and substitutes known natural causes, defective alimentation, aeration, and calorification in their place, acting simply by impairing the nutritive function. We have not, then, attacked and aimed to demolish theories, hypotheses, and systems, with a recklessness and waywardness that delights only in tearing down, but have substituted the real for the unreal, the true and rational for the false and hypothetical, cleared away the ruins and laid a foundation whereon others may finish a TEMPLE OF TRUTH, and dedicate it to Practical Medicine.